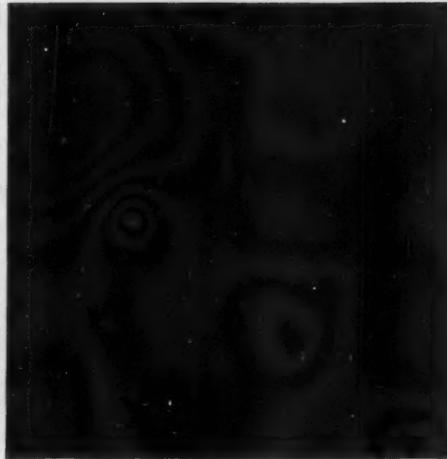


CONCRETE



OUR 52ND YEAR
Serving the Concrete Industries

FEBRUARY 1956



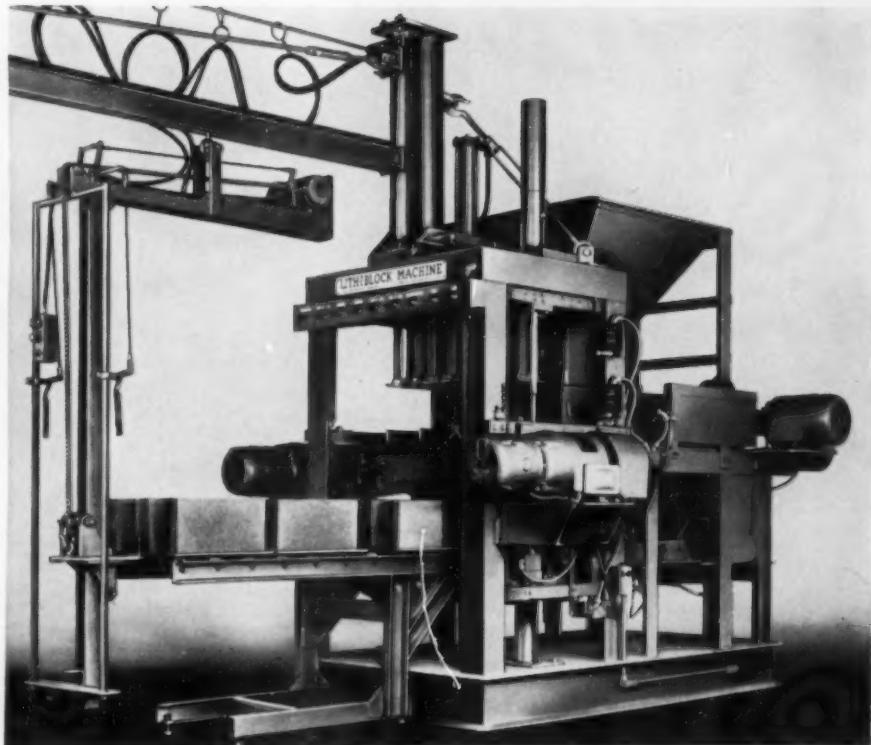
The hydraulic power package used with the new Lith-I-Block Machine has 12.5% more power than used with other block machines. This means greater speed and more units per day.

Improved feed drawer with Rota-Posed agitation. Fills mold box in $\frac{1}{2}$ the former required time. No shakers needed.

Micro-adjustable vibration gives you the most-compacted building units produced — and volume up to 50% more than ever before.

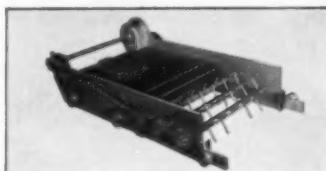
The NEW Lith-I-Block Machine is heavier and bigger.

Redesigned air-operated Lith-I-Block Machine has increased output — up to 50% greater capacity.

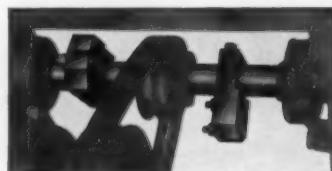


GO MODERN—GO LITH-I-BLOCK

LITH-I-BLOCK "Greater Production Machines"
NOW...HYDRAULICALLY or AIR POWERED



ROTA-POSED AGITATION — provided by three heavy-duty rotating shafts with interlocking fingers.



MICRO-JUSTABLE VIBRATION — vibrator weights are adjustable to any vibration intensity desired.



THE BLOCK WITH THE PROVEN FEATURES
MOST WANTED BY BLOCK PRODUCERS

SALES AND SERVICE THE WORLD OVER

LITH-I-BAR COMPANY

HOLLAND • MICHIGAN

ONE PIECE OF EQUIPMENT OR A COMPLETE PLANT LAYOUT

LITH-I-BAR CO.

Send me latest bulletins on Lith-I-Block Machine.

HOLLAND, MICH.

NAME _____ TITLE _____

COMPANY _____

ADDRESS _____

CITY & STATE _____

Only a WESTINGHOUSE has...



all these important performance features

Ready Mix operators agree. They want mixers that load fast . . . mix fast . . . discharge fast . . . at low operating and maintenance costs. That's exactly what Westinghouse Transit Mixers give you—and more!

A time-tested and proven mixer, with a new name and several new features, the new Westinghouse is available in five sizes, 4½ to 6½ cubic yards. You pick the size best suited to your operation and watch the Westinghouse go to work. Short, medium, long . . . whatever the length of haul, you are ready to pour . . . and fast . . . when you get there.



See WESTINGHOUSE Transit Mixers at the NRMCA show at the Coliseum in Chicago, Feb. 13-16th.

Double-action mixing

Exclusively Westinghouse is the 6 auxiliary reverse mixing blade drum feature which assures faster, better and more uniform mix in less than minimum turns specified on the rating plate.

Fully enclosed gear drive

Only Westinghouse Transit Mixers have a fully enclosed gear drive for the drum . . . important because there are no exposed gears or chains to wear out, break and cause trouble. Maintenance expense is drastically reduced.

Self-aligning drum mounting

There can't be any misalignment wear and tear with the Westinghouse exclusive ball-and-socket front end mounting AT THE DRUM because it doesn't transmit truck and mixer frame flexing to driving parts.

Other plus features

2-speed transmission permitting wide range of rotating speeds at efficient engine speeds—and mixer engine mounted at front of drum away from harmful dust, bumps and excess vibration.



CLIP AND MAIL COUPON TODAY

Westinghouse Transit Mixer Division,
LeTourneau-Westinghouse Co., Indianapolis, Indiana
Please send free illustrated booklet on
the new Westinghouse Transit Mixer.

Name.....
(PLEASE PRINT)

Company.....

Address.....

City..... Zone..... State.....

C-562



Specify
STRUTHERS WELLS



QUICK OPENING DOORS

Autoclaves and Boilers



STRUTHERS WELLS PRODUCTS

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BOILERS for Power and Heat . . . High and Low Pressure . . . Water Tube . . . Fire Tube . . . Package Units

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Crystallizers . . . Direct Fired Heaters . . . Evaporators . . . Heat Exchangers . . . Mixing and Blending Units . . . Quick Opening Doors . . . Special Carbon and Alloy Processing Vessels . . . Synthesis Converters

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MACHINERY for Sheet and Structural Metal Forming . . . Tangent Benders . . . Folding Machines . . . Roller Tables and Tumble Die Bending Machines . . . Press Brakes . . . Punching and Notching Machines . . . Forming Dies

Struthers Wells Quick Opening Doors, autoclaves, steam boilers and heat exchangers are designed, engineered and built to provide maximum safety, dependability and a long life of profitable return on your investment. It will pay you to insist on Struthers Wells when specifying this equipment for your cement block steam curing system.

Write for complete details.

STRUTHERS WELLS Corporation



TITUSVILLE, PA.

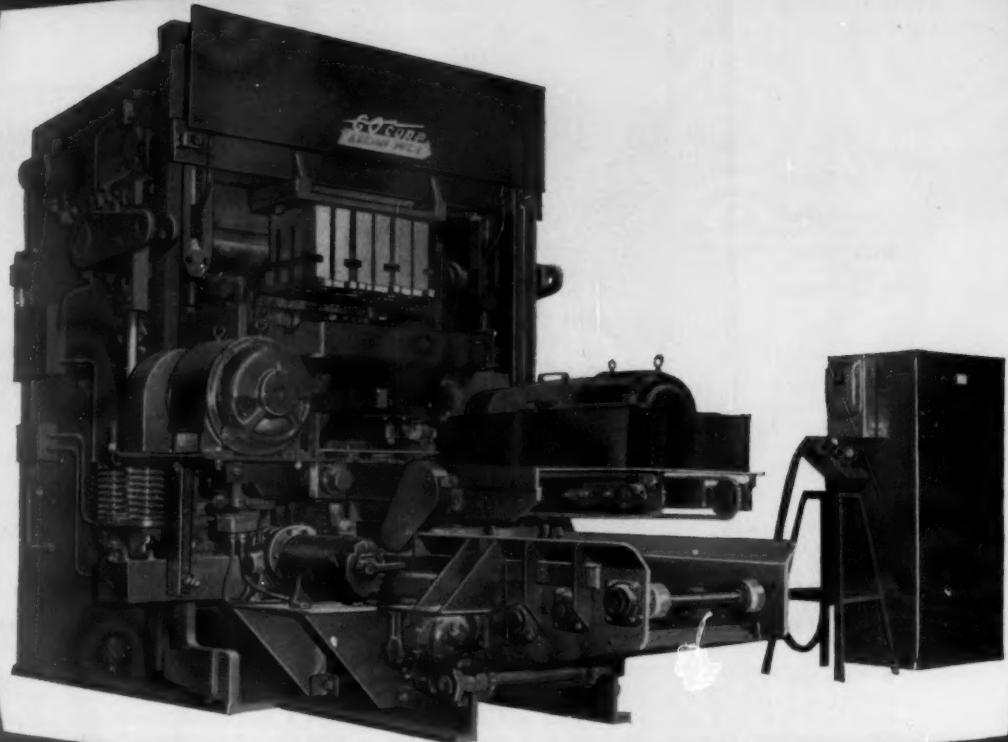
PLANTS AT TITUSVILLE, PA. AND WARREN, PA.

Offices in Principal Cities

Keep

YEARS AHEAD TOMORROW

WITH
THE
NEW



Hydraulic **GOCORP "TRUSTEE"**

NO DRAWING BOARD DREAM BUT THOROUGHLY FIELD TESTED—THE GOCORP, 3 at a time, PLAIN PALLET, "TRUSTEE" IS READY TO GO TO WORK FOR YOU NOW!

CONSIDER THESE FACTS!!!

- **HIGHER PRODUCTION**—Up to 1100 good blocks per hour, with many aggregates, without abusing the machine.
- **TOP QUALITY BLOCKS**—Fewer culs in production • Fewer rejects on the job • Variable cycle—for complete flexibility and constant control of quality • Accurate height control.
- **LOWER MAINTENANCE**—Hydraulic operation means fewer wearing parts • Smoother operation • The elimination of cams, cam followers and gears means big maintenance savings for you.

● **QUICK MOLD CHANGE**—Change full height molds in about 20 minutes—to other heights in about 30.

● **RUGGED CONSTRUCTION**—Heavy duty frame with heavy plate cross bracing • Heavy duty bearings • 5" dia. cross shafts • The "Trustee" is built to last.

● **NO BRAKE FAILURE**—"Trustee" vibrator motors are 10 HP plug reversing type • Designed for frequent stops and starts • No brakes to cause trouble.

The "Trustee" will accommodate, without alteration, molds of the majority of plain pallet machines now in use. You can have all the advantages of the modern hydraulic "Trustee" and protect your mold investment too!

Ask about the new GOCORP "Jet"—the 2½ X small brother to the "Trustee".

The "Trustee" machine does not replace or succeed the famous GOCORP "Senior" and "King" models.

GO-CORP
ADRIAN-MICH.

ELEGANT

Eden Roc

14 floors
concreted
with 'Incor'
in 13 weeks



**'INCOR' REDUCED CONSTRUCTION TIME BY 25%, SAVED \$30,000
IN CONCRETING MIAMI BEACH'S NEWEST LUXURY HOTEL**

● This year's big news in the wintertime vacation capital is luxurious new Eden Roc Hotel. Blending modern design with the warm beauty of the classical, this \$10-million, 14-story, 401-room hotel embodies the utmost in comfort and luxury. Each room, furnished, represents a total cost of \$29,000, said to be the highest in the world.

From tropical gardens to top of tower, tallest in Miami Beach, the Eden Roc is outstanding in every detail. Equally outstanding was the contractor's performance in completing this staunch, firesafe structure with its far-from-simple design in record time.

Drawing on many years' experience with concrete-frame erection, the Taylor Construction Company went onto a high-speed 'Incor' schedule on June 15th, topping the structure out September 14th—14 floors concreted in 13 weeks!

A total of 22,000 bbls. of 'Incor' 24-Hour Cement was used, and the Contractor estimates resulting savings of \$30,000 on forms and 25% in construction time, with corresponding reduction in overhead costs.

Typical 'Incor' performance, in a building as noteworthy for structural quality as it is for the elegance of its every external aspect.

*Reg. U. S. Pat. Off.



June 23, 1955

August 26, 1955

October 7, 1955

EDEN ROC HOTEL
HARRY MUFSON, President

Architect:
MORRIS LAPIKUS
New York—Miami Beach
Consulting & Structural
Engineers:
H. J. ROSS & ASSOCIATES
Miami

General Contractor:
TAYLOR CONSTRUCTION CO.
Miami

Ready-Mix 'Incor' Concrete:
MAULE INDUSTRIES, INC.
Miami



LONE STAR CEMENTS COVER
THE ENTIRE CONSTRUCTION FIELD

**LONE STAR CEMENT
CORPORATION**

Offices: ABILENE, TEX. • ALBANY, N.Y. • BETHLEHEM, PA.
BIRMINGHAM • BOSTON • CHICAGO • DALLAS • HOUSTON
INDIANAPOLIS • KANSAS CITY, MO. • NEW ORLEANS • NEW YORK
NORFOLK • RICHMOND • WASHINGTON, D.C.

LONE STAR CEMENT, WITH ITS SUBSIDIARIES, IS ONE OF THE WORLD'S LARGEST
CEMENT PRODUCERS: 18 MODERN MILLS, 38,000,000 BARRELS ANNUAL CAPACITY

FEBRUARY, 1956

CONCRETE

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FEATURES FOR THIS MONTH

Where the Shoe Pinches—Editorial 7

A discussion of the recurring shortages of portland cement from the point of view of their effect upon the enlargement of existing markets and the development of new markets for concrete products.

Will Cement Be Short This Year? 20

Some answers to the questions being asked about the cement supply outlook for the current year, along with a compilation of production estimates from all available sources. By Joseph N. Bell.

Construction Headed for New Record 24

This comprehensive analysis of the construction outlook indicates 1956 may set a new record total of about \$60 billion. Graphs show the growth trends of all major categories.

New Age in Prestressed Concrete 27

This article tells why precasting and prestressing are opening vast new markets for concrete. The author believes that a trend is in the making which will ultimately make concrete the dominant material for all deck construction work. By Harry H. Edwards.

Selling Architects the Advantages of Precast Concrete 28

Selling a new idea to architects and engineers demands a systematic approach. This article describes the effective system which has been worked out by one organization. By David Markstein.

Grading and Proportioning Aggregates for Block 30

An authoritative, easily understood discussion of some of the basic considerations involved in proportioning materials to make quality block. By William Grant.

The Balance Sheet—What It Means 42

Have you ever looked at a company balance sheet and wondered what on earth it means? In this article an expert tells you in simple language what each of the entries on a typical balance sheet signifies. By Lawrence Lipkin.

DEPARTMENTS

Industry News 9

Calendar of Coming Events 9

Everybody's Business 12

Not in the Specs 16

Letters to the Editor 47

Sales Clinic 48

New Literature 52

Manufacturers' Notes 54

Equipment & Materials 56

Book Page 60

Index to Advertisers 64

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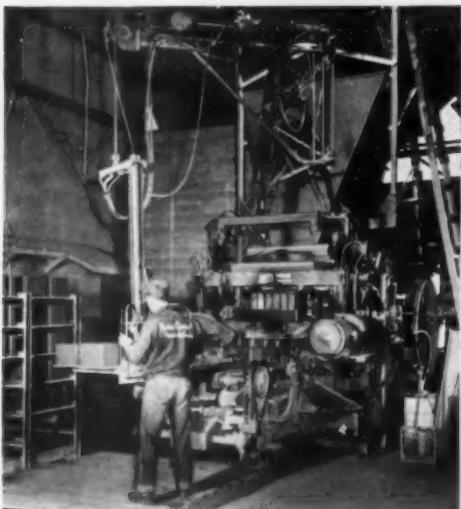


Another BESSER Booster*

*This is the 128th of a series of ads featuring leaders of the Concrete Products Industry who are stepping up block production with Besser Vibrapac machines.



Maine Cement Products Company officials (left to right): John W. Peavey, Office Mgr., Joe A. Thomas, Plant Supt., Edwin F. Smith, V. P., and Jess Storey, President.



Besser Vibrapac in the Portland plant. Front Pallet Feed Model. Fully automatic. Off-bearer merely guides the power hoist for removing green block to racks.

Three Maine Block Plants are 100% Vibrapac Equipped!

The Maine Cement Products Co., Inc. operates three concrete block plants — one at Portland, one at North Leeds and one at Bangor. All three plants are equipped with Besser Vibrapac machines.

Starting the manufacture of concrete block in 1949, the company chose Vibrapacs because of the long-lasting qualities of both the Vibrapacs and the end-product — Vibrapac block. In the words of President Storey, "We consider Besser the only machine that can produce block to meet all specifications."

Here is another example of a company that requires the finest and most dependable equipment to meet the ever-increasing demand for high quality block. And like so many other progressive block plants, they put their complete faith in Besser equipment.

BESSER COMPANY

BOX 127 • ALPENA, MICHIGAN, U. S. A.



Naturally, the company used Vibrapac Block for constructing their modern office building.



Portland yard, showing completed concrete masonry units (CMU) stacks.

NATIONAL HOUSING CENTER EXHIBIT — Besser Company maintains a permanent exhibit of concrete masonry in the new National Housing Center, Washington, D. C. Be sure to visit this fine display when you are in the nation's capital.



First in Concrete Block Machines!



A 8638-1PBC

THE EDITOR'S PAGE

WILLIAM M. AVERY

Where the Shoe Pinches

NOT long ago CONCRETE magazine conducted a survey among its readers to determine to what extent the production of concrete block was curtailed last year by the shortage of portland cement. As we reported in a paper presented at the recent NCMA meeting in New Orleans, the industry's total output for the year might have been about 5 per cent greater if cement had been plentiful.

On the face of it, then, it would appear that no serious or long-range damage was done to one of the largest markets for concrete products. While the additional 5 per cent would have been welcome to most producers, it seems unlikely that very many concerns suffered financial losses as a result of curtailed output. But there is a serious, long-range consequence of the recurring cement shortages that may have been lost sight of even by those most intimately involved in the problem. We have reference to the fact that as long as the supply of cement itself sets a ceiling on the output of the concrete industries, there can be no real inducement for anyone in the field to put forth any real effort to enlarge existing markets or develop new ones.

This painful fact was made painfully clear by the answer to our survey questionnaire. Company after company indicated that throughout most of 1955 the cement supply was adequate to take care of the normal demands of old customers, but that there was simply no justification or incentive to beat the bushes for new business. Indeed, many concerns were compelled to stop retail sales altogether, and to curtail advertising activities and market development programs that would only have created ill-will by encouraging orders that could not be handled.

Thus, by any standard of judgment, it would appear that the long-term development of markets for concrete and concrete products has been seriously affected by the cement industry's inability to keep pace with demand. There are no holds barred in the present day competition for building material markets; and no serious contender can afford to mark time for very long and expect to stay in the race.

It seems to us that this is beyond question the most serious aspect of the cement shortage. The search for new customers and new markets is essential to the health of any business, for there can be no such thing as an indefinitely prolonged perfect equilibrium. Momentum, the inherent appeal of concrete, and a long sustained construction boom, have all helped us to maintain our forward motion throughout a difficult period. Long before that forward motion is arrested we must reestablish the habits and the points of view that go with aggressive, imaginative merchandising. There is simply no reason to believe that we can even make a beginning in that direction without an adequate supply of portland cement.

THE NAME THAT'S... GROWING!

Today...industry's acceptance
of Columbia's 12"-HIGH is greater
than ever...because:

IT INSURES YOUR BUSINESS FUTURE

With a 12"-HIGH, you can keep your initial investment low by buying standard 4" and 8" molds, knowing that *at any time in the future* you can get into 12"-HIGH production and still keep your standard block output. The 12"-HIGH accommodates both standard plain 18 x 20 and 18½ x 26-inch pallets.

IT'S IDEAL FOR LARGE PLANTS

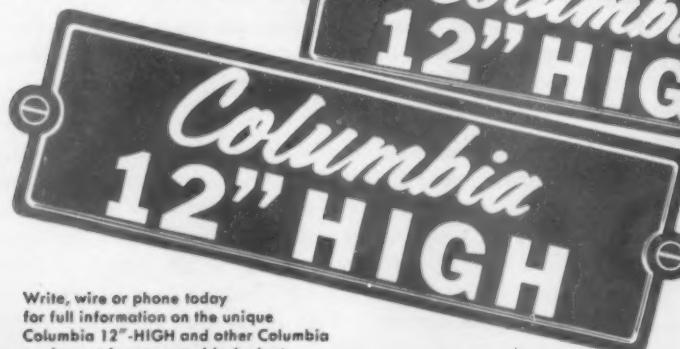
The Columbia 12"-HIGH, teamed with standard Columbia block machines, gives the plant owner a full range of specialty products along with continuous output of standard block. The 12"-HIGH also doubles in brass on standard types to provide peak production in emergencies. And it requires minimum floor space.

IT'S IDEAL FOR MEDIUM AND SMALL PLANTS

Since the 12"-HIGH makes all standard block as well as special 12"-HIGH shapes, it is a complete production unit in itself. That's why it's called the "one-machine block plant."

IT HAS BEEN PROVED, TESTED AND ENDORSED

The Columbia 12"-HIGH underwent more than two years of intensive development and testing before being placed on the market in January, 1954. Since then, scores of operators have given it a rigorous workout in actual production of drain tile, water meter boxes, silo staves and other special shapes...as well as regular 4", 6" and 8"-high block.



Write, wire or phone today
for full information on the unique
Columbia 12"-HIGH and other Columbia
equipment for concrete block plants.

District Offices in: Wisconsin, Ohio, South Carolina, Mississippi, Florida,
New Jersey, Virginia, California, Massachusetts, Montreal, Que. and
Vancouver, B. C.

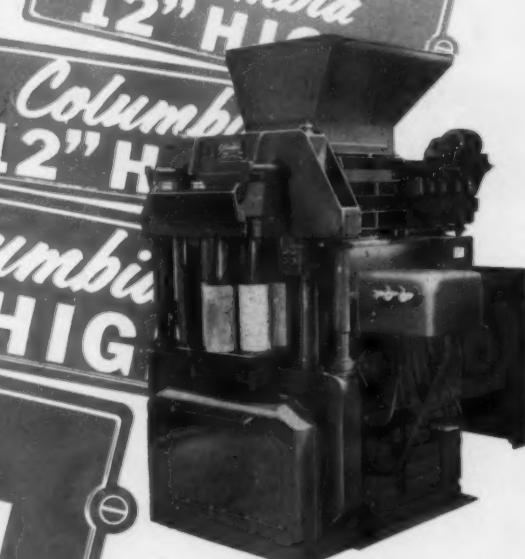


Columbia

MACHINE

Home Office: 107 S. GRAND, VANCOUVER, WASHINGTON

Factory Branch and Warehouse: Mattoon, Illinois



The Columbia 12"-HIGH, above, has the same rugged construction and operating features as the great Model 8 and Model 12 Columbia standard block machines.

INDUSTRY NEWS

Canadian Products Group To Meet in Windsor

Subjects from architecture to outdoor advertising — from water-proofing to building loans — will be covered at the seventh annual convention of the National Concrete Products Association in Windsor, Ontario, February 20 and 21. The program will range from panel discussion groups to prominent speakers representing large Canadian corporations. To lend an international flavor to the affair, speakers will also come from the National Concrete Masonry Association and the Michigan Concrete Products Association.

George Y. Masson, vice-president of the Ontario Association of Architects, will discuss with delegates how concrete products can best fit in with architects' requirements. Of special interest to Canadian concrete products manufacturers will be an address by W. P. Markert, director of promotion of NCMA. Tips on improving employer-employee relations will come from Jarmin C. Craig, vice-president in charge of personnel, Chrysler Corporation of Canada.

Effectiveness of outdoor advertising will be outlined by J. F. Pitts, of C. E. Marley Ltd., Windsor, while

the general manager of Dow Corning Silicones Ltd., D. C. R. Miller, will show a film on silicone waterproofing of concrete products.

Other speakers include Walter Ball of the National Research Council; C. A. Sirrine, executive secretary, Concrete Products Association of Michigan; J. A. Jones, director of loan insurance, Central Mortgage and Housing Corporation, and a speaker from the National Home Builders Association. Robert Eakins of Century Concrete Products Ltd., Toronto, will act as chairman of a panel discussion of concrete specialties.

■

New Jersey Concern to Make Light Aggregate

The Sayre & Fisher Brick Company, Sayreville, New Jersey, has announced plans for the construction of a plant for manufacturing lightweight concrete aggregate. The material will be produced from the concern's clay deposits located at Sayreville, and the facilities will be designed by R. F. Leftwich, well-known consultant in the field of manufactured lightweight aggregate.



Oops!

● A full load, high discharge and a steep grade proved too much for a ready-mixed-concrete truck at Aberdeen, Washington, the other day. Although the driver was uninjured, the experience convinced him there must be some better way to discharge truck mixers.

Calendar . . .

FEBRUARY 13 to 16 National Ready Mixed Concrete Association—Annual Convention and Biennial Show—Conrad Hilton Hotel and Coliseum—Chicago, Illinois.

13-18 Danish National Institute of Building Research—Symposium on Winter Concreting — Copenhagen, Denmark.

20, 21 National Concrete Products Association — Annual Convention — Prince Edward Hotel — Windsor, Ontario.

20-23 American Concrete Institute—52nd Annual Convention — Bellevue-Stratford Hotel—Philadelphia, Pennsylvania.

23-25 Concrete Contractors Association of Greater Chicago — Midwest Concrete Exposition — Morrison Hotel — Chicago, Illinois.

27-MARCH 2 American Society for Testing Materials—Committee Week — Hotel Statler — Buffalo, New York.

6-10 American Concrete Pipe Association—Forty-eighth Annual Convention—Broadmoor Hotel—Colorado Springs, Colorado.

15-17 Concrete Products Association of Washington—Annual Spring Meeting—Seattle, Washington.

APRIL 12-14 American Concrete Agricultural Pipe Association—Sixth Annual Convention—Brown Palace Hotel—Denver, Colorado.

13-14 Texas Ready Mixed Concrete Association—Annual Convention—Statler Hilton Hotel—Dallas, Texas.

MAY 16-18 Prestressed Concrete Institute—Second Annual Convention — Hollywood Beach Hotel—Hollywood, Florida.

Predict Cement Shortage Will Ease Up in 1957

The cement shortage should end in 1957 for most areas unless the present boom-level demand increases substantially, predicts *Engineering News-Record*, McGraw-Hill publication. The portland cement industry is now midway in an unprecedented expansion program designed to increase capacity by 25 per cent from the 1954 level.

Annual capacity of portland-cement mills is expected to reach 366,000,000 barrels by the end of 1956, the magazine estimates on the basis of a survey of industry plans. Capacity at the end of '55 is estimated at 320,000,000 barrels, compared to 298,000,000 barrels in '54.

The industry's bold new expansion program calls for 23,000,000 barrels of new capacity into production by the end of '55, and a still more ambitious increase for 1956 — about 56,000,000 barrels of new capacity.

By the end of '56 capacity in the clinker stage — when material is one step away from the final grinding into cement — is expected to be 368,000,000 barrels. (In past years clinker capacity has been considered a more realistic measure than finished cement capacity figures, which sometimes are too optimistic.)

The magazine's estimations assume that about 1,000,000 barrels of new capacity, earlier scheduled for this year, will not start until early 1956, and that about 10,000,000 or 11,000,000 barrels of new capacity now scheduled to be producing in '56 will not be ready until '57.

It is certain this huge program, the biggest this year since the 1920's, will mean higher prices for cement, the magazine says. Many companies announced price boosts for the first quarter of 1956 ranging from 15 cents to 25 cents per barrel. Cement companies do not have enough depreciation reserves available to finance expansion and at the same time keep existing mills in running order, the magazine says. Announced costs on additions to existing plants vary all the way from \$2.00 per barrel of annual capacity to \$7.50. Figures on new mills run from \$5.60 to \$12.00.

stitute of Architects, Associated General Contractors, Builders' Exchange and Home Builders Association.

Mr. Pafford said that orders will be taken for the old 8-inch block during the transition period for builders who require them to complete jobs already in progress. However, after March 1 no orders will be taken for the old units except by special arrangement with producers.

Mobile Radio Users Warned About Sun Spots

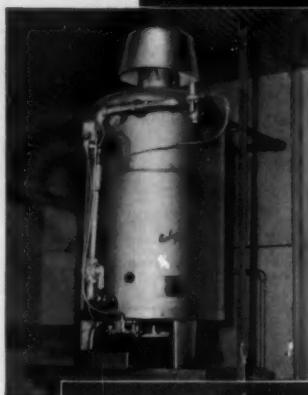
Numerous reports of long distance interference to the mobile services between 25 and 50 megacycles have been received by the Federal Communications Commission. This interference is due to the reflection of radio signals from the upper layer of the ionosphere, caused by the rise of the sunspot cycle. Thus radio services separated by hundreds or even thousands of miles, and normally well out of range of each other, are able to cause mutual interference. As sunspot activity increases over the next several years, this long distance interference will continue to increase in frequency and intensity. These services are not assigned on an exclusive, non-interference basis and the Commission is able to afford little if any relief from this interference.

While this interference occurs for a small percentage of the time over a full sunspot cycle of eleven years, it is sufficiently frequent and sufficiently severe during the higher part of the sunspot cycle, which we are now just entering, to suggest that operators of mobile radio systems used for purposes which require a high degree of protection from interference at all times should give serious consideration to the feasibility of using higher frequencies, which are free from it. Operators of systems who decide to continue to operate in the 25-50 megacycle band should inform themselves of the probable amounts of interference which they may expect and make the required adjustments in their operations to permit them to perform their necessary functions in spite of the interference.



● Pictured at the left is the prize winning display put on by The Florida Concrete and Products Association at the 41st annual convention of the Florida Association of Architects of the American Institute of Architects which was held at Daytona Beach, Florida, recently.

**the Water Heater you need
for your *Year 'round*
redi-mix plant**



Burkay

Model 718

- A High-Recovery Water Heater—403 gal. per hr. at 100° rise. May be installed multiple to meet larger needs.
- Remarkable operating economy.
- Instant response to load demands.
- All copper waterways guarantees no corrosion and long life.
- Compact. Easy to install.
- Trouble-free. All gases.

Burkays are light, compact. Easily fit overhead in out-of-the-way places.

• Freezing temperatures need not put a damper on your concrete mixing activities. The answer to this predicament—mix with hot water so that the concrete can "set" before it freezes; and heat your mixing water with a dependable, gas-fired Burkay Water Heater.

Burkays have many natural advantages for this use. They are light, compact, easy to install, and may be put in out-of-the-way places. They are portable, practically service-free, are flexible as to installing additional units.

The usual Burkay installation consists of a heater plus storage tank (recovery system) to supply a large volume of one-temperature hot water; smaller installations may use instantaneous heaters.

See your nearest A. O. Smith Burkay distributor for information.

Through research  ...a better way

A.O.Smith
CORPORATION

PERMAGLAS DIVISION • KANKAKEE, ILLINOIS

WRITE FOR COMPLETE INFORMATION

A. O. SMITH CORPORATION
Permaglas Division, Kankakee, Illinois, C-256

Please send me helpful data on water heaters
for Redi-Mix Plants.

Name.....Title.....

Company.....

Address.....

City.....Zone.....State.....

Everybody's Business

OUTLOOK

- After a year in which the American economy produced more of everything (profits, goods and jobs) than ever before, a reasonable amount of speculation about the year ahead is surely understandable. For what it may be worth, CONCRETE presents herewith a summary of some of the opinions and indications that strike us as being significant:
- Last year the total output of the nation increased by approximately 8 per cent over 1954—about four times as much as the population, which has been rising at the rate of about 2 per cent a year. While it is by no means impossible, it seems highly unlikely that economic growth in 1956 will maintain the break-neck pace of 1955.
- Some 200 economists whose opinions were sought by F. W. Dodge Corporation believe that general business in 1956 will be better than last year, with greater output, higher wages and higher prices in prospect. These experts believe that total output, as measured by gross national product, will rise to a peak by mid-year, and then show a slight downturn in the second half.
- All indicators seem to point to a continuation of the construction boom well into 1956, with homebuilding alone likely to present a weak spot. New construction put in place is expected to total around \$44 billion, compared with \$42 billion in 1955. Thus, as in every year since 1951, construction will not only set a new record, but will also in all probability rate a somewhat larger percentage share of total dollar spending.
- Backlogs of industrial construction are around the highest levels since the early part of the Korean war, and the outlook for new commitments also appears to be good. Only a major economic upheaval could possibly have any effect upon the outlook for a high volume of field construction activities during the next 12 months. Some authorities believe that the 1956 rate of industrial construction may exceed the record pace set last year by as much as 15 or 20 per cent.
- Somewhat opposed to all this giddy optimism, almost all authorities seem to agree that the slight dip in homebuilding which showed up late in 1955 is due to deepen in 1956. Credit curbs, which may or may not have started the downward swing, have now been eased somewhat by the Government, but a marked scarcity of mortgage money still seems to be slowing things down in the homebuilding field.
- For those who tend to feel despondent over the apparent interruption in the homebuilding boom, here are some facts worth contemplating: half of all the homes in the United States are more than 30 years old; 16 million have no central heating, 9 million no hot water, 8.4 million no toilets, 9.4 million no bathtubs, and 3.7 million no kitchen sinks. All in all, it appears that there's still a little work to be done in this field.

CEMENT PRICES

- A general round of cement price increases forced construction costs to new high levels in January. According to one survey of the effect of price increases, the average of the prices in 20 cities went up 13 cents in January to a new all-time high of \$3.68 per barrel. Increases ranged from a low of 10 cents per barrel in Boston and Kansas City to 25 cents per barrel in Birmingham and St. Louis. Two large cement firms who had announced 25-cent a barrel increases for all mills in the first quarter of the year, scaled the amounts down to 15 cents a barrel in some areas to meet competition.

LABOR

- Most signs point to a relatively peaceful year between management and labor. Wage increases under new contracts will probably average around 12 cents per hour—about the same upward movement as last year. Fringe benefits will be a factor of increasing importance in most contract negotiations.

More Competition Ahead In Building Materials

A vast array of new home building materials may lie just over the horizon, according to the National Association of Home Builders. They are expected to come, NAHB said, from the giants of the chemical industry and other large corporations who foresee a highly profitable, continuing market for new products in the present and future activities of the home building industry. A number already have quietly put their tremendous research facilities to work on new materials, many in the field of plastics, which could result in significant changes in the homes of the future.

The home building industry, which in 1955 completed its 10 millionth post-war home, anticipates an annual market for 1.2 to 1.3 million new homes until around 1965. Then, to keep pace with a sharp upturn in family formation, the result of the post-war "baby boom," the housing output should soar to 1.7 to 2 million units a year and the dollar volume from the present \$14.6 billion to about \$20 billion.

This outlook, based on government and industry figures, has not been lost on the nation's large corporative enterprises. Industrial experts believe the new materials will come on the market gradually. Ordinarily there is a lengthy lapse of time between the conclusion of the laboratory work on a new product and its general acceptance by the public. During the interim, many firms field-test the new product — an operation frequently carried out in conjunction with the NAHB Research Institute.

The role of new products in home building received major attention at the 12th annual NAHB Convention-Exposition in Chicago, January 22-26. The program included a full-dress discussion of the use of plastics.

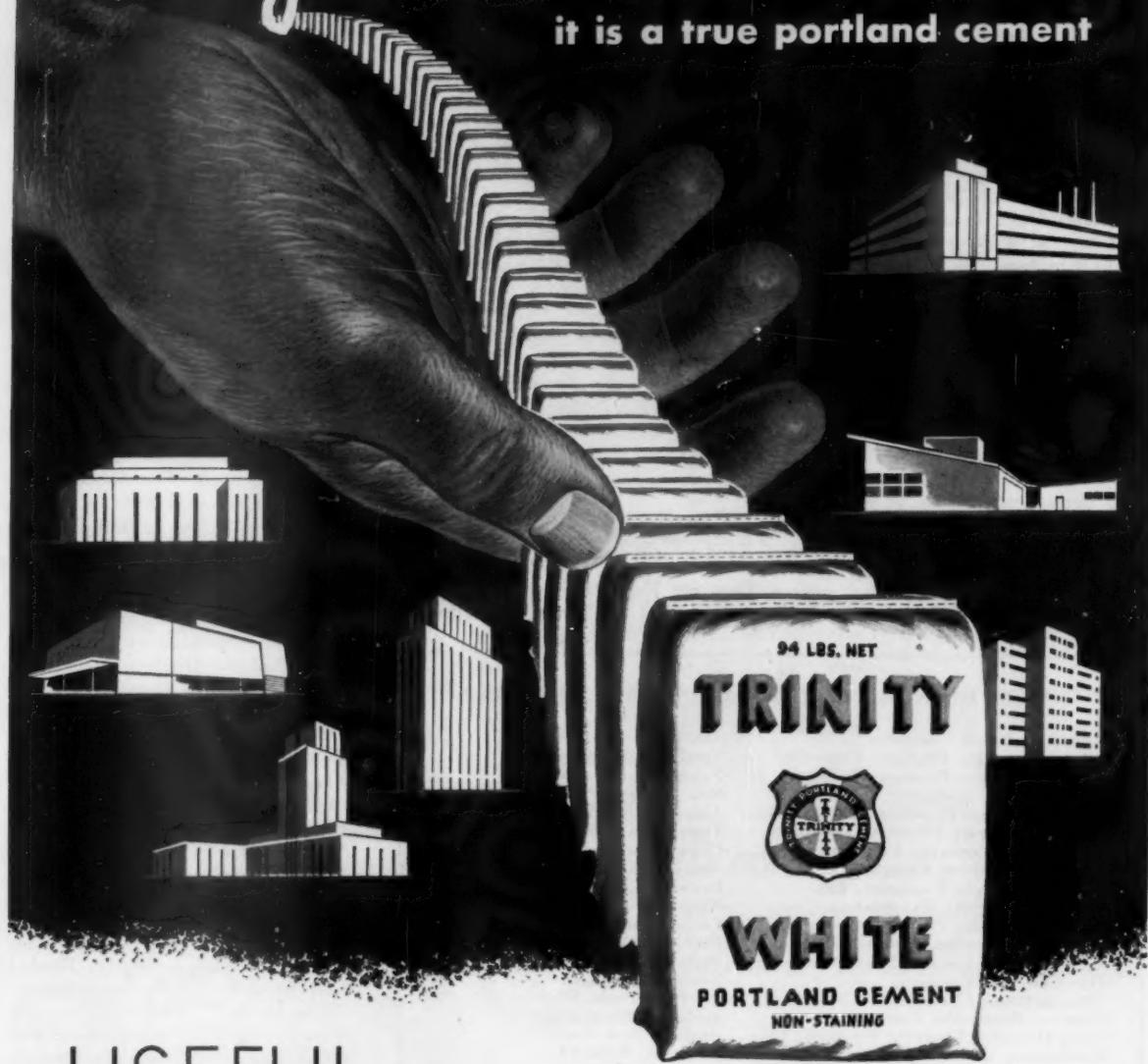
For the immediate future, NAHB construction specialists expect to see more attention paid to "sound conditioning" in homes, as well as a considerable expansion of the trend towards air conditioning. Standardization of the component parts of the house — closets, doors, windows and the like — as well as off-site prefabrication will be stepped up and there will be better use made of glass.

Increased attention will be paid to house design, both exterior and interior. More and more builders not only are employing the services of competent architects, but are giving the architects more latitude in their designs.

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... the whitest white ...

it is a true portland cement



USEFUL

in almost every type of building, both inside and outside.

As architectural concrete units or as stucco or cement paint, it emphasizes architectural perspective and detail. It has a high light-reflection which gives beauty and special utility to many interiors.

Trinity White's extra whiteness gives truer colors where pigments are added.

Widely used in terrazzo for its contrast-y white and better color effects in either simple or ornate designs. Meets all Federal and ASTM specifications. Ask for TRINITY White.



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Geist, Palmetto, Fischer Win Top Safety Awards

Of the 91 block plants that participated in the second annual safety contest conducted by the National Concrete Masonry Association, 39 completed the contest year without a single lost-time accident. Winner of the Class A award (for plants producing 5 million or more equivalents) is The Geist Builders Supply Company, Cleveland, Ohio. In the Class B competition (production ranging from 1.5 to 5 million units) the top award goes to Palmetto Quarries Company, Columbia, South Carolina, while the Class C award (under 1.5 million units) was captured by the Fischer Lime & Cement Company, Memphis, Tennessee.

The three top award winners received the association's bronze trophies during the organization's 36th annual convention at New Orleans during the week of January 23. Certificates of achievement were also presented to the 36 competing firms which completed the contest year ending July 31, 1955, without sustain-

ing lost-time accidents. Fourteen plants in this group had actually operated two consecutive years without a lost-time accident. In the accompanying table these concerns are indicated by asterisks.

Division of Highways, F. E. Seaman, Lock Joint Pipe Company, and Robert R. Sheridan, Eastman Kodak Company.

The opening day of the four-day meeting will be devoted entirely to technical committee meetings, while the final day will be given over to a morning session on research activities, and to an afternoon panel discussion of current concrete problems. The latter meeting will be moderated by Dr. A. Allan Bates, vice president in charge of research, Portland Cement Association.

Shrinkage, Prestressing To Be Highlighted by ACI

Entire sessions on the shrinkage of concrete and on prestressed concrete will be featured at the 52nd annual convention of the American Concrete Institute at the Bellevue-Stratford Hotel, Philadelphia, February 20 to 23. Various aspects of the shrinkage problem will be discussed by such authorities as William Lirch and J. J. Shideler, Portland Cement Association, R. E. Copeland, National Concrete Masonry Association, F. N. Hueem and B. Tremper, California

Reinforced Concrete Design Reports Made Available

Since 1948, various organizations in this country have sponsored joint research on reinforced concrete, the work being carried out under the guidance of the Reinforced Concrete Research Council. The Council has various projects underway to obtain test data which will be useful in the development of a more scientific procedure for the design of reinforced concrete.

In order for the members of the sponsoring organizations to be kept informed of the progress of the various investigations, the Council has adopted a policy of securing reprints of the following reports. Copies of the following reports may be secured from R. F. Blanks, chairman, Reinforced Concrete Research Council, 510 Denver National Bank Building, Denver, Colorado, at \$0.50 per copy:

Bulletin No. 1—A Study of Combined Bending and Axial Load in Reinforced Concrete Members.

Bulletin No. 2—Inelastic Behavior in Tests of Eccentrically Loaded Short Reinforced Concrete Columns.

Bulletin No. 3—What Do We Know About Diagonal Tension and Web Reinforcement in Concrete.

Bulletin No. 4—Yield-Line Theory for the Ultimate Flexural Strength of Reinforced Concrete Slabs.

Bulletin No. 5—Shearing Strength of Reinforced Concrete Column Footings.

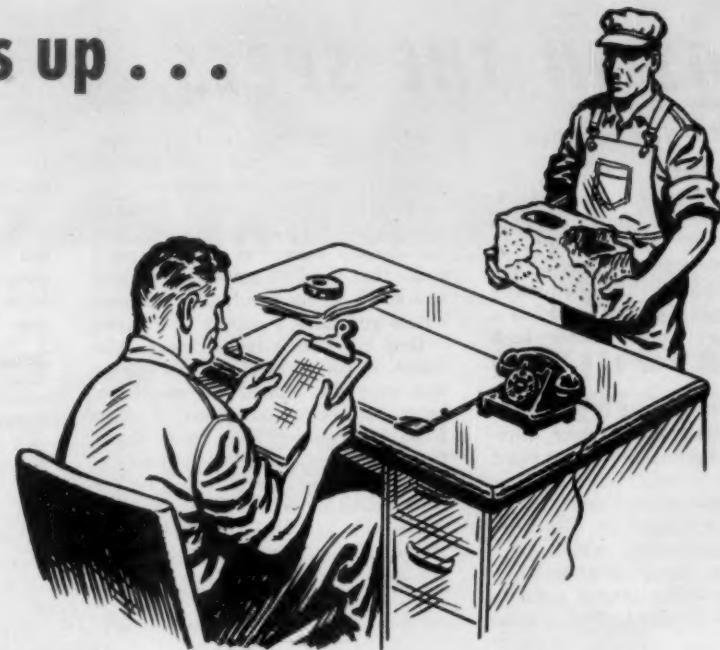
WINNERS OF NCMA CERTIFICATES OF ACHIEVEMENT

Aberdeen Block Company	Aberdeen, South Dakota
*Adams Concrete Products Company	Ypsilanti, Michigan
Alaska Concrete Products Company	Fairbanks, Alaska
*Alvine Brick Company	New Oxford, Pennsylvania
Auburn Cement Products Company, Inc.	Auburn, New York
Capital Concrete Products Company	Topeka, Kansas
Christensen Concrete Products	Grand Island, Nebraska
Concrete Products Company	Sioux City, Iowa
Concrete Supply Company, Inc.	Evansville, Indiana
*Felicetti Concrete Products	Ningara Falls, New York
Fergus Concrete Products Company	Fergus Falls, Minnesota
Franklin Concrete Products Corp.	Franklin, Virginia
Fred Johnson Cement Block Company	Duluth, Minnesota
*Hay-Con Tile Company	Detroit, Michigan
Illinois Brick Company	Franklin Park, Illinois
*Jackson Ready-Mix Concrete	Jackson, Mississippi
John Haeser Concrete Products, Inc.	Buffalo, New York
Katterjohn Concrete Products	Paducah, Kentucky
Kentucky Concrete Products, Inc.	Newport, Kentucky
*Maples Concrete Block Company	Cohutta, Georgia
Maramonte & Sons	Milwaukee, Wisconsin
*Mitchell Concrete Products, Inc.	Mahomet, Illinois
*M. J. Grove Lime Company	Frederick, Maryland
N.C. Products Corporation	Raleigh, North Carolina
*Northwest Concrete Products Company	St. Cloud, Minnesota
*O. G. Hanson & Son	Princeton, Minnesota
Patterson Supply Company	Monogahela, Pennsylvania
*Paul Rieffel, Inc.	Hamburg, New York
Rhode Island Cinder Block Co., Inc.	North Providence, Rhode Island
Ruby Lumber Company	Madisonville, Kentucky
Standard Block Company	Gulfport, Mississippi
Stewart-Nattinger, Inc.	Springfield, Missouri
*Southern Tier Concrete Products Co.	Alfred, New York
The Concrete Products Co. of Cape Cod, Inc.	Falmouth, Massachusetts
*Western Concrete Products, Inc.	Bismarck, North Dakota
Zeidler Concrete Products Machinery Company	Clear Lake, Iowa

Did You Know?

Out of every 100 houses built in the United States, 46 sell for less than \$12,000, 43 are in the \$12,000 to \$20,000 price range and 11 sell for \$20,000 or more?

it all adds up . . .



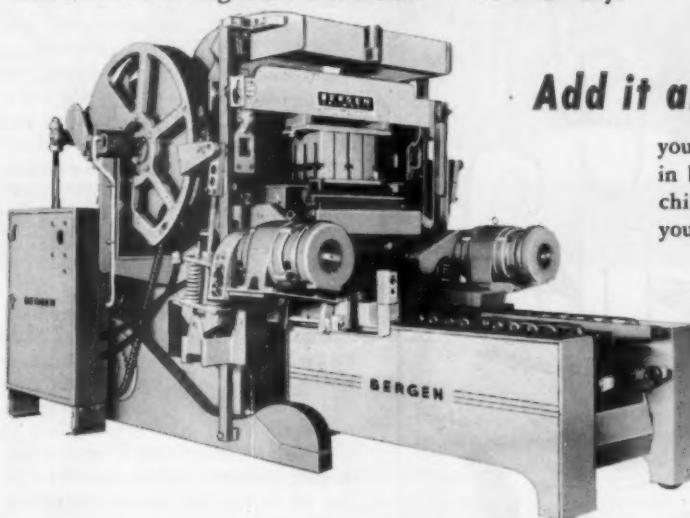
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How do you build a better block . . . increase production . . . ? Block plant operators, everywhere, agree these are essential to successful, profit-making operations. The BERGEN TRI-MATIC is engineered to build

... more . . . better block. It's super-powered to increase your production up to 6 mold cycles per minute . . . an average production of 10,000 — 8" equivalent units per 10 hour day.



Add it all up . . .

you'll find BERGEN'S engineering "know-how" in building modern, high-production block machinery will help you increase profits and lower your operating costs.

Write or phone "Collect" for details on BERGEN'S answer to your block plant problems.

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NOT IN THE SPECS

The You-Know-What Shortage

Notwithstanding our recent disavowal of any suspicion that there is much hilarity in the cement shortage problem, we'll be hanged if we seem to have much success keeping the subject off this page. If the situation persists, we may have to establish a new department under some such heading as "Laughing Through Tears".

Anyhow, the shortage is present, at least by implication, in three unrelated news items that have just come into our possession.

Item one concerns two ready-mixed concrete firms located in Worcester County, Massachusetts, which have announced their intention of building a \$10 million dollar cement plant in northern New England. The obvious

reaction to that bit of news, of course, is that if they can make that kind of money in the ready-mix business, why in blazes do they want to monkey around manufacturing cement? And the obvious answer is that you can't make that kind of money, or indeed any kind, in the ready-mix business unless you have a supply of cement.

Item two comes from Calera, Alabama, in the form of a press release that says the United Cement Company has begun construction of a \$750,000 cement plant near there. Cement consumers in this area will be happy to know that this will be one of the most modern cement plants in the world, and that it will be completed in about six months, but their joy may taper off a bit when they learn that the facility's immediate mission in life will be to produce lime

—no cement. Wonder how long this sort of hocus-pocus has been going on?

Our final exhibit comes from Westport, Connecticut, where a live hand grenade was discovered in a load of ready-mixed concrete as it was being discharged on a construction project. As you might expect, the police were baffled to account for the grenade, but they did point out darkly that the cement had come from overseas. Perhaps after all there are worse things than being out of cement.

Knife Work

A perfectionist out in Lehighton, Pennsylvania, has just completed time and motion studies to determine the best method of opening cement bags. He reports that the best way is to make a knife slit on each side—one almost the entire length of the bag, the other a relatively short one. Then, as the bag is picked up, the contents



flow freely through the long slit because the short slit on the other side eliminates suction that might trap cement.

If the cement industry ever gets interested in wooing customers again, we feel confident they'll figure out some way to slit the bags at the mills. Meanwhile, it isn't a bad thing just now for a cement user to have a sharp knife around the plant. If he gets real discouraged about not having any bags to split, he can always slit his throat.

Good Neighbor Policy

In a recent discussion of the atomic waste-disposal problem, *Power* magazine suggests that one solution is to pack the stuff into concrete containers and shoot it to other planets by rocket ship. If this procedure is adopted, we hope they'll send along singing commercials or friendly jingles of some sort, so our neighbors in interstellar space won't get a completely negative picture of the splendid civilization we've established here on earth. If we can't actually build a little good will for ourselves out there, we might at least strive to establish an attitude of neutrality against the day when this tired old planet gets too hot for us.



● "Haven't you finished showing Miss Elen how our truckmixer works?"

CHAIN BELT

REX

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ADJUSTA-WATE
MOTO-MIXERS



LEADERSHIP Looks to Tomorrow . . . Today

The ability to look ahead, work ahead, to the needs of tomorrow, is a characteristic of leadership!

This is the great advantage Rex Adjusta-Wate Moto-Mixers offer you. Rex leadership brings you the "years-ahead" features today . . . gives you those profit-making advantages that keep you ahead of your competition. With Rex, you lead with *your* customers! In many cases, it will be years before you can expect comparable advantages in ordinary truck mixers.

Major improvements cannot be accomplished overnight. Sometimes they take years of experimentation and testing before they are truly ready! Actually, Rex engineers are today working on developments that look far into the future. When they will be ready is difficult to say. For, as the leader, we cannot afford to gamble . . . to let users bear the burden of testing. The progress of ready-mix concrete . . . of truck mixer development . . . is too closely allied with Rex leadership for us to take

CONTINUED ON NEXT PAGE . . .



unnecessary chances. BUT, this we can promise — if you want to keep ahead of your competition ... if you want to give your customers the best in service and quality, you'll want Rex

Adjusta-Wate Moto-Mixers. They're as far ahead of the field today as was the first truck mixer we introduced more than 25 years ago. You're always ahead with Rex.

YOU'RE DOLLARS AHEAD... EVERY DAY WITH **REX** ADJUSTA-WATE

The "years-ahead" design of Rex Adjusta-Wate Moto-Mixers® is built around a simple fact — the *faster* you can charge your mixer, mix the concrete, deliver it and return for another batch ... the more profit you make. Actual "time tests," under every conceivable type of operating condition, prove that

Rex is minutes faster on the complete cycle. Add up the number of trips you make per day and you'll easily see how important these minutes saved per trip are. They mean more trips per truck ... extra deliveries ... more customer satisfaction. And, satisfying customers is your best path to profit.



CHARGING

We do not claim Rex will charge faster than any other mixer. But, don't be fooled by claims of charging speed. A few seconds saved at the plant is only achieved by the sacrifice of speed in mixing and discharging, where slowness will cost you minutes. We *do* state that no other truck mixer will equal the over-all speed of a Rex. Rex gives you speed where it counts ... the fastest trip cycle.



MIXING

No truck mixer will even approach the speed or thoroughness of the Rex mixing action. Speed here is important ... and quality of mixing is even more important. Your customers demand thoroughly mixed, uniform, top-quality concrete and you give it to them with Rex. The Adjusta-Wate design principle that provides a drum of proper size, shape and low incline also provides the greatest free mixing space — a "must" for quality mixing!



DISCHARGING

Here is where you ... and your customer ... appreciate speed. Rex will discharge faster ... more completely ... and with a spouting range greater than any other mixer. The Adjusta-Wate design principle *always* locates the *discharge point back of the rear tires* where it must be for effective discharge. Only the Adjusta-Wate principle permits mounting the mixer on any truck to gain this favorable discharge ... and still retains proper load distribution for maximum pay load.



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ADJUSTA-WATE MOTO-MIXERS

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Rex® Adjusta-Wate gives you the important three that add up to fastest operation ... more trips per day. ®

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Litho in U.S.A.

Wisconsin Products Assn. Elects New Officers At Milwaukee Meeting

Members of the Wisconsin Concrete Products Association gathered at Milwaukee January 11 and 12 for that organization's 35th annual convention. The two-day session included a panel discussion of curing, material handling and other technical problems, a report on some current activities of the national association, talks by members of the local group, as well as by representatives of the Portland Cement Association, on promotion activities in the state, and an excellent address entitled "The Human Relations Road to Success", by L. L. Cunningham of the Business Institute of Milwaukee.

Carl Thompson, Thompson Concrete Products Company, Kenosha, was elected president, succeeding Loyal Clark of Wausau. Other new officers are Cecil Hemstock, Hemstock Brothers, Sparta, first vice president; Eugene Kleist, Kleist Concrete Block Company, Eau Claire, second vice president; and Arthur W. Devos, Devos Block Company, Milwaukee, secretary-treasurer. The following new directors were also elected: George Andrews of Fond du Lac, Claude Murphy of Wisconsin Rapids, and Robert Frieke of Manitowoc.



● New officers of the Wisconsin Concrete Products Association. Back row, left to right: Robert Frieke, director, Carl Thompson, president, George Andrews, director, Eugene Kleist, second vice president, Herb Loucks, director, and Edwin Bartlett. Front row: Ray Minette, promotion chairman, Claude Murphy, director, Cecil Hemstock, first vice president, and A. W. Devos, secretary-treasurer.

Discussions at the Milwaukee meeting indicated some sentiment in favor of employing a full time executive secretary or engineer-director to operate the state association. References made to the cement shortage suggested that there was considerable distress among block producers during the late summer and fall months, several reporting that it was not at all uncommon to run 2 or 3 days

and then be compelled to shut down. Spot shortages of concrete block brought about by this state of affairs resulted in gains for poured basements, as well as some inroads by block producers in adjoining states. Notwithstanding such difficulties, however, it is believed that the 1955 output of block in Wisconsin probably totaled 80 million 8-inch equivalents.

Cement Production

Production of finished portland cement in October 1955, as reported to the Bureau of Mines, Department of the Interior, totaled 27,924,000 barrels — an increase of 8 per cent over October 1954. Mill shipments in October 1955 totaled 28,641,000 barrels, an increase of 6 per cent more than in October 1954 — while stocks of 8,753,000 barrels of finished portland cement on hand October 31, 1955 were 9 per cent less than on the same date last year. Clinker production during the month totaled 26,818,000 barrels, an increase of 7 per cent over the October 1954 figure.

One hundred and fifty-seven (157) plants in 37 states and Puerto Rico reported a production of 27,924,000 barrels of finished portland cement during October 1955 as compared to 25,887,000 barrels during the same month last year.

Clinker production during the month of October 1955 was 26,818,000 barrels compared to 25,031,000 barrels during October 1954.



Anyhow, Now It's Useful

● Only one picture is available on this special television set at Columbia Cement's mill near East Fultonham, Ohio. It enables the operator to determine when bins have been filled with limestone without actually looking into them. It is believed that Columbia was the first concern in the cement industry to utilize television in this fashion.

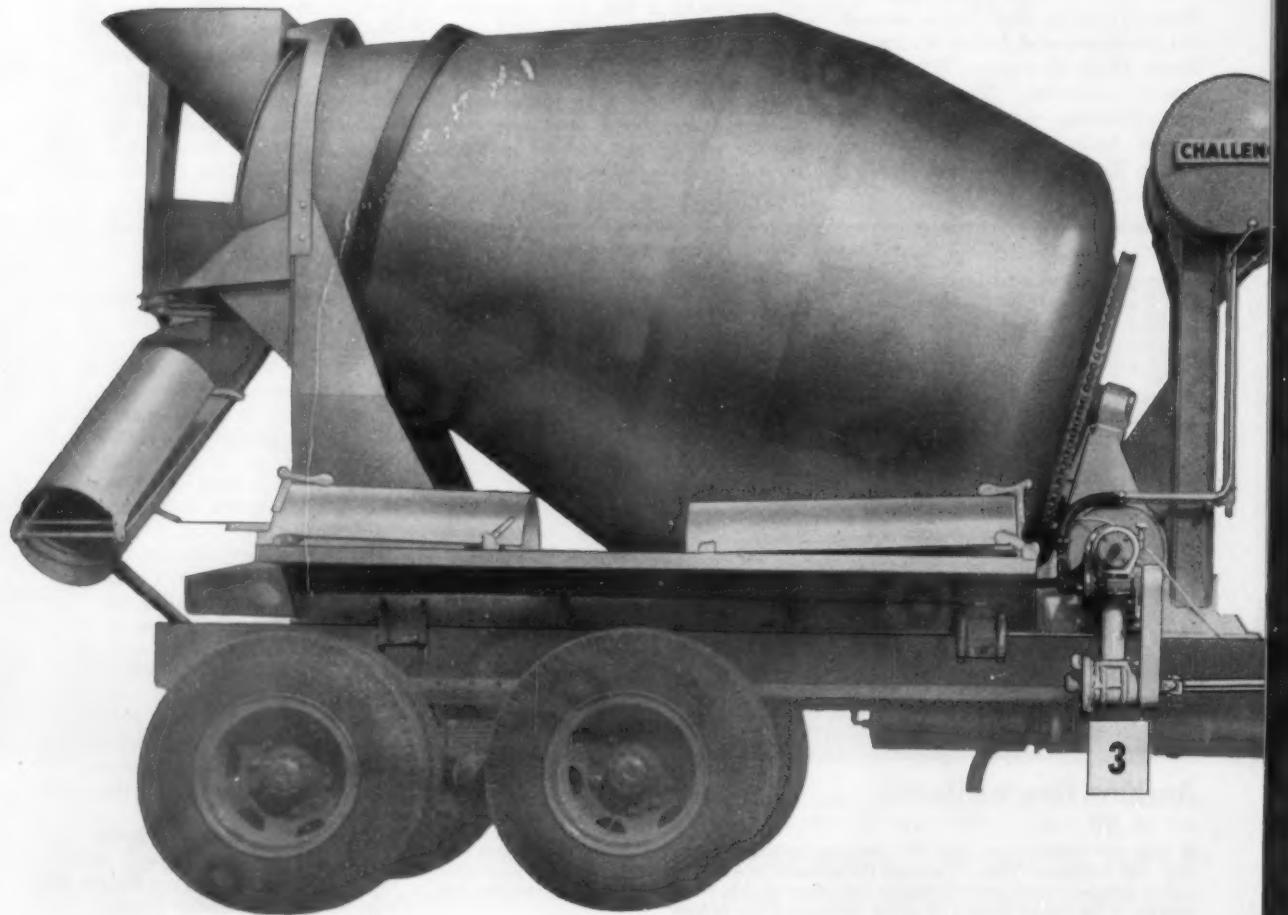
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- Standard Industrial Parts and Automotive Clutch and Transmission
- 2-Speed Operation . . . Both Mixing and Discharging
- Final Shock Absorbing Chain Drive to Drum
- Front Engine-Take-Off Approved and Warranted by Most Leading Truck Manufacturers



Thoroughly Developed!

CHALLENGE *Pacemaker with*

"ENGINE TAKE-OFF" Drive

for 5 • 5½ • 6 • 6½ Cubic Yard Models

Designed for mounting on most standard truck chassis, without alteration of truck cab, the Challenge "ETO" is a complete unit ready to go . . . nothing extra to buy! Powered by the truck engine, the Challenge "ETO" virtually operates for FREE! Accurate cost records show fuel savings as much as \$450.00 per year per mixer . . . ALL NET PROFIT! Think what this would mean in terms of your mixer fleet.

See This Great NEW Challenge Pacemaker. On Display at the NRMCA Show . . . February 13-16.

COOK BROS. EQUIPMENT CO.

Exclusive National Distributor for the Only Complete Line of Truck Mixers on the Market . . . CHALLENGE, Value Standard of the Industry

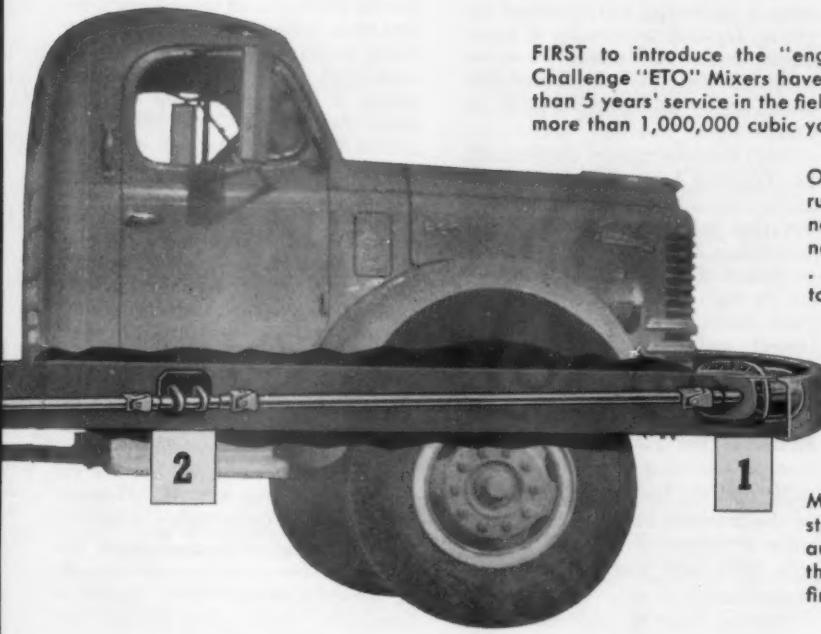
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Telephone: Cleveland 6-3151

FIRST to introduce the "engine take-off" drive principle in 1951, Challenge "ETO" Mixers have been thoroughly developed during more than 5 years' service in the field, efficiently and economically delivering more than 1,000,000 cubic yards of concrete on all type jobs.

OFFSET FRONT DRIVE (1), enclosed in a rugged, lightweight housing, consists of a notched, high-speed high-strength belt . . . no slippage . . . no complicated adjustment . . . assures an uninterrupted flow of power to mixer drive at all times.

DRIVE LINE (2), installed on the outside of the truck frame where it is easily accessible for lubrication and inspection. Installation does not require alteration of standard truck sheet metal or a specially trained crew.

MIXER DRIVE ASSEMBLY (3), includes standard industrial input drive, standard automotive clutch and transmission, and the PROVED Challenge Gear Reducer to final chain drive.



Will Cement Be Short This Year?

By JOSEPH N. BELL

TO HUNDREDS OF CONCRETE PRODUCERS 1955 will be remembered as the year of the big cement squeeze. It's impossible to judge whether the acute shortage of cement in some areas caused more pain in hurt feelings or in hurt business. Undoubtedly there was some of the latter; and without question there was a great deal of the former.

Probably no question is as pressing today in the minds of those who work in the concrete field as this one: "Is there cement in my future?" Reams of speculation has been offered on the subject. Dozens of authorities have analyzed the cement shortage and passed judgment on it. In an effort to provide its readers with an authoritative picture of just exactly what can be expected in the availability and price of cement in 1956 and the years to follow, CONCRETE has studied all of these sometimes conflicting reports, surveys and quotations. The following summary, then, is a synthesis of the best information available.

Some basic facts of life concerning the manufacture of portland cement should be considered first. Cement producers are caught in a completely unexpected spiral of demand for their product. As pointed out by Joseph Young, of the Lehigh Portland Cement Company: "No one could have surmised that the average consumption of cement in the 10-year period following World War II would increase at the astounding rate of 19 million barrels per year. In 1945, it was conceded that the industry had ample capacity to take care of the then foreseeable demand for cement for years to come. In fact, it was not

until about 1950 that the tremendous import of the post-war building boom was fully understood and appreciated."

Unquestionably there was some feet-dragging among cement producers in expanding manufacturing facilities to meet the growing demand. This is perhaps understandable in light of the facts that: (1) cement capacity isn't added like a new oven in a bakery. It costs \$10 to \$14 a barrel for new capacity, and \$4 to \$6 for expanding present facilities; (2) producers can still remember vividly the days—not too long ago—when plants were idle and capital investment was wasting away; (3) at first all indications were that the present demand for cement was abnormal and adding capacity to care for it would simply mean idle plants when the boom subsided; (4) most cement producers are by nature on the conservative side.

Now, however, things are different. The building boom seems to be with us for a good long time to come. Conservatism on the part of cement producers has been cast aside, and the pendulum, if anything, has swung too far in the opposite direction. New plant facilities for making portland cement and expansion of existing plants are mushrooming all over the country. New production records have been set every year since 1944. Plant utilization has jumped from 68 per cent of operating capacity in 1946 to 93 per cent last year. This is close to the practical limits of production, since a portion of capacity must be shut down each year for repairs and renovation.

The increase in portland cement

production since the end of World War II has outstripped that of all other basic construction materials. Thirty-one cement companies in 22 states had new plants or plant expansion scheduled in 1955, and 19 companies in 23 states are scheduled to complete expansion work in 1956—with a total predicted additional capacity of 59 million barrels.

If all this sounds like whistling in the graveyard to ready-mixed-concrete producers who couldn't fill their orders last year, it should be emphasized that a great deal of this new capacity is not yet in production. But it will be soon, which should be good news to the concrete industry, which last year experienced its most critical cement shortages. In some areas these shortages have persisted for many years, forcing producers to buy imported cement or get it from remote points, thereby jacking up the cost considerably. These things haven't endeared the ready-mix and products producers to their customers nor the cement companies to the producers. But without question, domestic cement manufacturers are now trying hard to meet the nation's inflated and growing construction demands with an unprecedented expansion program. Almost everyone is rooting for them. One sign of the times occurred recently in California where a Superior Court judge denied lemon growers an air pollution injunction against a cement plant on the grounds that the cement which would be lost by an enforced shutdown was vitally needed for important construction work.

In scattered areas throughout the country, cries of distress continue to be aired by cement users. Typical is Cincinnati where many private and

TABLE I—ESTIMATES OF PRODUCTION, CAPACITY AND CONSUMPTION OF PORTLAND CEMENT (Millions of bbls.)

Source	Production					Capacity			Consumption			
	1954	1955	1956	1959	1954	1955	1956	1959	1954	1955	1956	1959
Bureau of Mines	271	300			291	298	338	407	274			
Survey of J. S. Young, Lehigh Portland Cement Co.					294		368					
Engineering News-Record					298	320	366					
Estimate of N. R. M. C. A.	271								274	302		
Rock Products	271	298	320	350		305	338	407	274		350	
Consensus	271	299	320	350	294.3	307.7	352.5	407	274	302		350

public construction projects have been halted by cement shortages. Customers for ready-mixed concrete are waiting in line — and not liking it at all.

George Nelson of the Kosmos Portland Cement Company calls it the "worst shortage we've ever had." "And," adds Mr. Nelson, not hopefully, "we think it will last through 1956. Mills have expanded, some as much as 30 per cent, but they just can't seem to catch up."

A survey of the concrete products industry by CONCRETE magazine brought out the following information particularly pertinent to the cement shortage:

1. Our informants showed an average 14 per cent increase in block production in 1955 over 1954.
2. The industry's total output last year would have increased by less than 5 per cent if the supply of portland cement had been unlimited.
3. Out-of-area cement, including foreign purchases, accounted for only about 4 per cent of all the cement used in block last year.
4. 36 per cent of our informants said they experienced some loss of production last year due to the cement shortage.

Of course no single group is in a better position to predict the outcome of the cement shortage problem than the people who make the cement. Summarized below are a group of pertinent capsule comments on this situation from a representative group of cement manufacturers:

Fred Doolittle, vice-president, Penn-Dixie Cement Corporation: "By the end of 1956, Penn-Dixie will have new clinker capacity of 4,154,000 barrels — 3 million already in production and the balance to become available at our Des Moines, Iowa, plant on Aug. 1, 1956."

Fred T. Wiggins, vice-president, Universal Atlas Cement Company: "Our shipments of cement in 1955 exceeded those of 1954 by an estimated ten per cent. In 1956, we expect to top 1955 by about 6 per cent. This is an overall increase of nearly 17 per cent

since 1954, most of which is the result of additional production. In 1954, over half our shipments were to ready-mix concrete producers and during 1955 we expect to top that. New construction records are being forecast for 1956; there may be some shortages, although, as in the past, out-of-area shipments from other sections should ease such situations to a considerable degree."

Ellery Sedgwick, Jr., president of Medusa Portland Cement Company: "Two years ago we announced a \$25 million expansion program. It now appears we will have to step that up to a \$30 million four-year program. This year Medusa is spending money on new plant capacity at the rate of \$100,000 a week. Next year it will be \$200,000 weekly. Our overall expansion program provides for a 30 per cent increase in capacity from 1955 through 1958. However, the cement industry, confronted with a tremendous expansion in highway expenditures, again will be unable to meet the requirements of all customers. This condition will prevail until 1957, when, because of the vast production expansion now underway in the industry, there will be an adequate supply for all uses."

O. M. Clark, sales manager, Kosmos Portland Cement Company: "We should have some 20 per cent more cement production during 1956, providing we have no major breakdown. Moreover we do not anticipate there will be as much large work next year as we have had this year, which should make additional cement for all our customers."

Standard Portland Cement Division, Diamond Alkali Company: "Between January 1, 1954 and

January 1, 1956, our production was increased 17 per cent. We expect to increase capacity another 200,000 barrels or 12 per cent which will be available June 1, 1956."

Howard A. Coleman, General sales manager, Missouri Portland Cement Company: "We expect to increase our shipments in 1956 to ready-mix plants by the following percentages: St. Louis, 15 per cent; Memphis, 12 per cent; Kansas City, 27 per cent. New capacity is now under construction at both St. Louis and Kansas City which will result in further increases in 1957."

C. G. Browning, executive vice president, Lehigh Portland Cement Company: "We expect to have an additional 1,000,000 barrels available for the trade next year over this year, and at least another 1 million more by the end of 1957. Unfortunately, some of our expansion projects have dragged due to shortage of steel and other products and some delay on engineering. However, we are moving as fast as we can, for we are firmly convinced that we must expand our capacity as rapidly as we can to take care of the increasing demand for cement."

Chris Dobbins, president, Ideal Cement Company: "The first phase of our expansion program, to be completed in 1956, will add 6 million barrels to our annual capacity. Work contemplated for completion in 1957 will add another 4.5 million barrels."

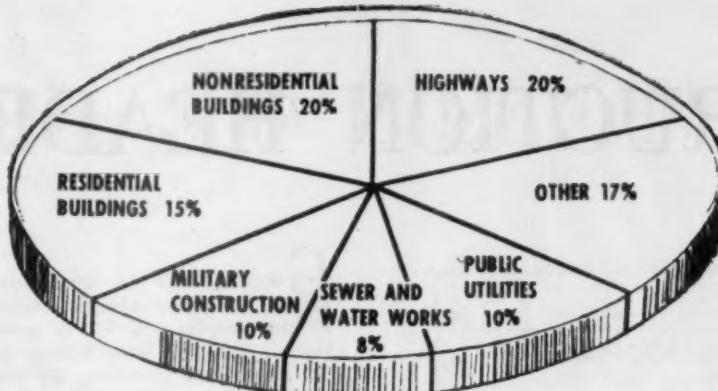
Joseph S. Young, president, Lehigh Portland Cement Company (speaking before the Financial Analysts of Philadelphia): "An

TABLE II—EXPANSION OF CEMENT MANUFACTURING FACILITIES IN CANADA (Millions of Bags)

Location	Producer	Capacity Add - New	Scheduled Production Start
Clarkson, Ont.	St. Lawrence Cement Co.	Add-6 million	April, '57
Woodstock, Ont.	Canada Cement Co.	New-6 million	Fall, '56
St. Mary's, Ont.	St. Mary's Cement Co.	Add-3 million	Fall, '56
Montreal, Que.	Canada Cement Co.	Add-6 million	June, '56
Edmonton, Alberta	Inland Cement Co.	New-7 million	Mid '57
Regina, Sask.	Saskatchewan Cement Corp.	New-3.5 million	Aug. '56
Bamberton, B. C.	B. C. Cement Co.	Add-4 million	Late '57
Chilliwack, B. C.	Internat. Cement Co.	New-3 million	Early '56

Table III—CEMENT PLANT EXPANSION PLANNED AND UNDER CONSTRUCTION IN U.S.
(By Geographic Area)

State	Location	Producer	Capacity Added (in bbls.)	Scheduled Completion
Alabama	Mobile	Ideal Cement Co.	600,000	1957
	Spocari	Lone Star Cement Co.	500,000	1956
Arkansas	Okay	Ideal Cement Co.	1,250,000	1956
Arizona	Rillito	Arizona Portland Cement Co.	1,000,000	End 1955
California	Lucerne Valley	Permanente Cement Co.	2,000,000	late 1956
	Permanente	Permanente Cement Co.	1,400,000	Mid 1956
	San Andreas	Calaveras Cement Co.	1,000,000	Mid 1956
	Monolith	Monolith Portland Cement Co.	1,300,000	1956
	Mojave	California Portland Cement Co.	2,000,000	late 1955
	Mojave	California Portland Cement Co.	2,500,000	1957
	Redwood City	Ideal Cement Co.	1,200,000	1957
	Victorville	Southwestern Portland Cement Co.	5,800,000	1956
Colorado	Boettcher	Ideal Cement Co.	1,200,000	Mid 1956
Florida	Bunnell	Lehigh Portland Cement Co.	1,100,000	1956
Illinois	Dixon	Meduse Portland Cement Co.	1,000,000	1956
	La Salle	Alpha Portland Cement Co.	500,000	1959
Michigan	Alpena	Huron Portland Cement Co.	3,000,000	late 1956
	Bay City	Aetna Portland Cement Co.	1,000,000	1956
	Detroit	Peerless Cement Corp.	1,000,000	late 1956
	Petoskey	Penn-Dixie Cement Corp.	800,000	1956
Missouri	Cape Girardeau	Marquette Cement Mig. Corp.	1,200,000	late 1956
	Prospect Hill	Missouri Portland Cement Co.	1,500,000	1957
	Sugar Creek	Missouri Portland Cement Co.	1,200,000	1957
Montana	Trident	Ideal Cement Co.	1,300,000	1957
Nebraska	Louisville	Ash Grove Lime & Portland Cement Co.	700,000	1956
	Superior	Ideal Cement Co.	1,300,000	1957
New York	Clementon	Alpha Portland Cement Co.	300,000	late 1955
	Howes Cave	North American Cement Corp.	540,000	1956
	Hudson	Lone Star Cement Corp.	1,000,000	1956
Ohio	Lorain	Universal Atlas Cement Co.	625,000	1956
	Ironton	Alpha Portland Cement Co.	800,000	1958
	Painesville	Diamond Alkali Co.	320,000	Mid 1956
	Toledo	Medusa Portland Cement Co.	1,000,000	1957
	Zanesville	Columbia Cement Div., Pittsburgh Plate Glass Co.	1,000,000	1956
	Paulding	Consolidated Cement Corp.	1,250,000	1956
Indiana	Buffington	Universal Atlas Cement Co.	3,000,000	1956
	Greencastle	Lone Star Cement Corp.	600,000	late 1955
Iowa	Des Moines	Marquette Cement Mig. Corp.	400,000	1956
	Mason City	Northwestern States Portland Cement Co.	300,000	1956
	W. Des Moines	Penn-Dixie Cement Corp.	1,100,000	Aug. 1956
Kansas	Bonner Springs	Lone Star Cement Corp.	600,000	late 1955
Kentucky	Kosmosdale	Kosmos Portland Cement Co.	600,000	late 1956
Louisiana	Baton Rouge	Ideal Cement Co.	625,000	1956
	Lake Charles	Lone Star Cement Corp.	2,000,000	1956
Maryland	Union Bridge	Lehigh Portland Cement Co.	2,000,000	Mid 1956
Oklahoma	Ada	Ideal Cement Company	1,400,000	1956
Oregon	Oswego	Oregon Portland Cement Co.	700,000	1956
Pennsylvania	Bath	Keystone Portland Cement Co.	650,000	1956
	Walford Station	Bessemer Limestone & Cement Co.	800,000	1956
	Nazareth	Lone Star Cement Corp.	1,000,000	1956
	Brodhead	National Portland Cement Co.	600,000	1956
	Coplay	Coplay Cement Mig. Co.	600,000	1956
	Neville Island	Pittsburgh Coke & Chemical Co.	2,000,000	1956
	Stockertown	Hercules Cement Corp.	500,000	1956
	York	Medusa Portland Cement Co.	750,000	late 1956
South Dakota	Rapid City	South Dakota Cement Co.	900,000	1956
Tennessee	Chattanooga	General Portland Cement Co.	1,250,000	Early 1956
Texas	Dallas	Lone Star Cement Corp.	1,400,000	Early 1956
	El Paso	Southwestern Portland Cement Co.	2,000,000	1956
	Houston	Ideal Cement Co.	1,525,000	1956
	Houston	Lone Star Cement Corp.	1,100,000	1956
	Ft. Worth	General Portland Cement Co.	1,250,000	1956
Virginia	Roanoke	Lone Star Cement Corp.	800,000	1956
Wisconsin	Milwaukee	Marquette Cement Mig. Co.	1,250,000	1956



• The pie chart above shows approximately how the current production of portland cement is distributed among major use classifications.

unofficial but thoroughly reliable survey of the industry discloses that 74 million barrels of new production will be added during 1955 and 1956, to bring the total capacity of the country to a staggering 368 million barrels. It is treacherous to attempt to estimate the additional cement required for a comprehensive national highway program. This year highways are expected to use about 55 million barrels and in 1956, the figure will probably be more than 60 million. Assuming Congress is committed to a program such as the Eisenhower bill envisions, we estimate that the average requirement for additional cement would be about double the present use for highway construction."

Walter A. Wecker, president, Marquette Cement Manufacturing Company: "There will be more cement available in 1956. The increase won't be as large as we would like to see it, but a tremendous amount of additional capacity, countrywide, will be in the process of being built in 1956. Marquette will have 6 per cent

more cement available in 1956 than we had in 1954, including an addition of 2,852,000 barrels of capacity in 1956. We believe the percentage for the entire industry will be at least this much. It will vary from area to area, of course. But if 1956 cement demand turns out to be the same as last year, the increased production could bring about a balance in supply and demand even before the tremendous new capacity building in 1956 becomes fully effective. There is already evidence that cement producing capacity in some areas will be more than needed. We sincerely hope that our company and the entire cement industry can do a better job in 1956 in supplying the demand. We're building furiously with that end in view."

Outside the cement industry, predictions were being made, too. (For a composite of specific predictions of present and future cement capacity, see Table I) Here are two representative and authoritative comments:

Vincent P. Ahearn, executive sec-

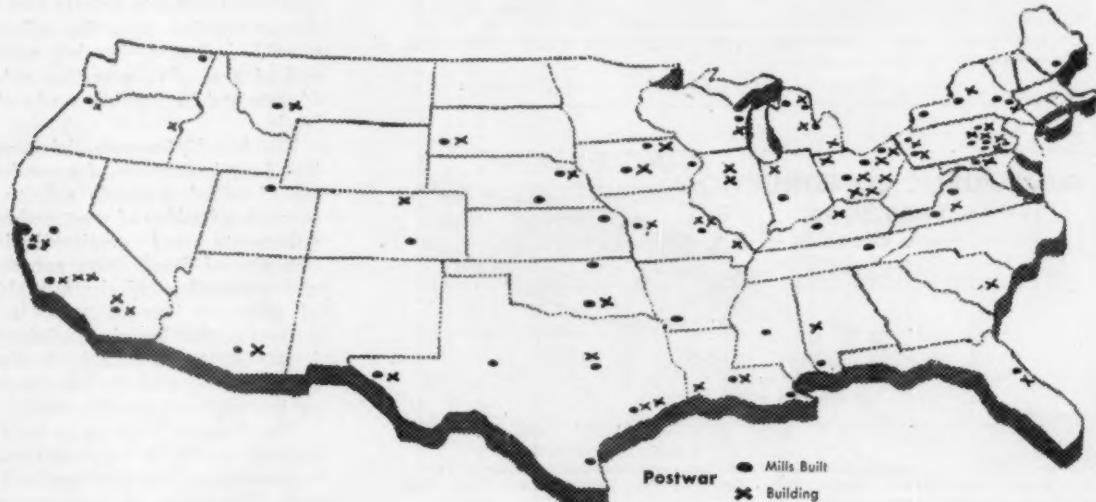
retary, National Ready Mixed Concrete Association: "The ready mixed concrete industry is left with the disquieting realization that the shortage of cement experienced in 1955 will carry over until 1956 in many of the areas where a severe shortage was experienced last year."

Engineering News-Record Magazine: "The cement shortage should end in 1957 for most areas unless the present boom-level demand increases substantially. The portland cement industry is now midway in an unprecedented expansion program designed to increase capacity by 25 per cent from the 1954 level."

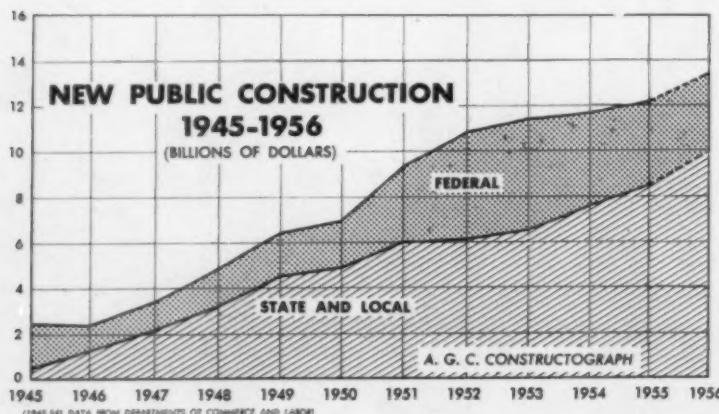
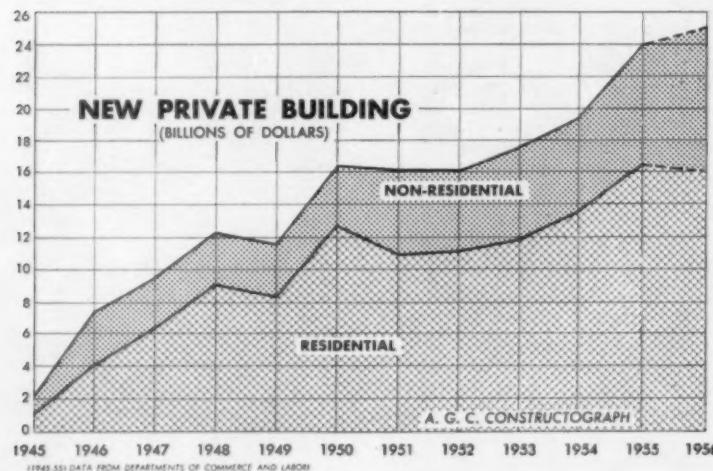
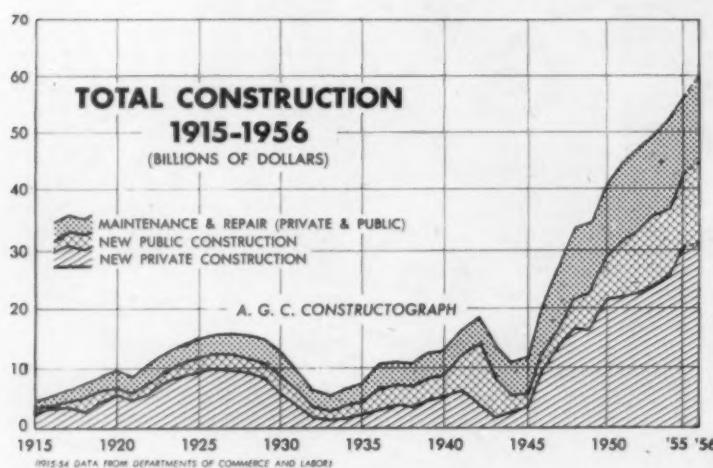
Nor is Canada being left behind in the cement capacity expansion race. After years of recurring summer shortages which brought unofficial rationing and a prodigious seller's market, it looks as if buyers may soon be in the saddle. In the last six months of 1955, ten major expansion projects were announced by seven Canadian cement companies. Kilns now a-building in Canada are expected to increase capacity by some 50 million bags annually (not barrels) — which is 47 per cent of total estimated 1955 production, which in turn was 17 per cent greater than 1954. Estimated 1955 production of 105 million bags is expected to increase to 120 million in 1956 and 150 million in 1957. (See Table II)

What about cement prices? What can the ready-mix and products producers expect in 1956 in regard to the cost of their most important raw material. Since World War II the average price of portland cement has risen only about half as much as the composite price of all other build-

(Turn to page 50)



CONSTRUCTION HEADED



CONSTRUCTION — the nation's largest single production activity of the postwar era — is pointed toward its first \$60 billion year in 1956, after smashing all previous records for the 10th consecutive year in 1955 when structures of all types were put in place in the continental United States at a valuation of approximately \$57 billion. Far outstripping all predictions in 1955, the gain of \$5 billion over the previous year was the most spectacular since 1951, representing an increase of almost 10 per cent over the tremendous 1954 performance record.

The total, consisting of an estimated \$42.2 billion in new construction and \$15 billion in the maintenance and repair of existing facilities, accounted for about 15 per cent of the gross national product and more than 15 per cent of the country's total employment.

In addition, investment by the federal government in overseas construction — principally in bases for the armed forces and other defense facilities — exceeded \$1½ billion in 1955, the A.G.C. estimated.

The estimate of 1956 potential is divided into \$44.5 billion for new construction and \$15.5 billion in maintenance and repair work, excluding federal construction overseas. Major factors are anticipations of continuing gains in private non-residential building, more than offsetting a mild decline in housing activity, and of a steadily mounting volume of state and local public works of all kinds.

The \$60 billion potential is predicated on indications of a continued high level of economic activity, an increasing backlog of construction requirements, and continued large numbers of bond issue approvals; and assumptions of the availability of adequate investment funds, increased production of materials to alleviate shortages, a moderate rise in costs, and no major work stoppages or international complications.

The dramatic increase in construction during 1955 was substantially under-estimated in most major forecasts. The scope of the increase is

FOR \$60 BILLION YEAR

demonstrated by the fact that construction activity, which had reached boom proportions in 1954 while other major segments of the economy were declining, surged even closer to 15 per cent of the gross national product in 1955 when most segments of the national economy were rising markedly. Thus, more than one dollar out of every seven spent for goods and services in the United States was invested in construction.

Further indicating the importance of this segment of the economy, more than 9.8 million persons, or over 15 per cent of the total average employment for the year, were employed directly and indirectly through construction activity. Direct construction employment totaled about 4,750,000, and the remainder were employed in activities servicing construction in the fields of distribution, transportation and manufacturing.

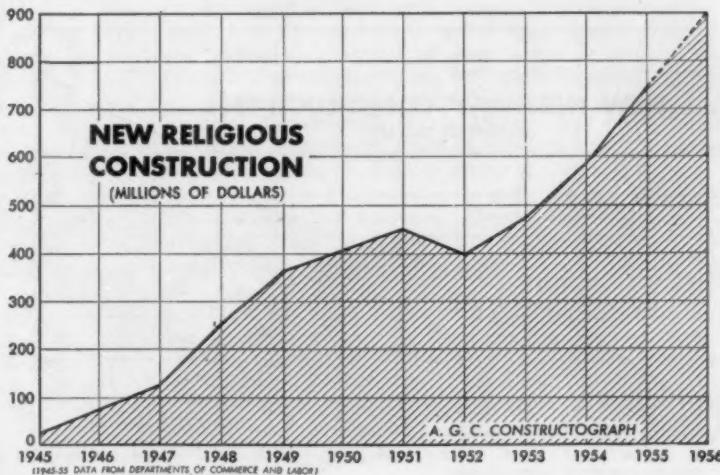
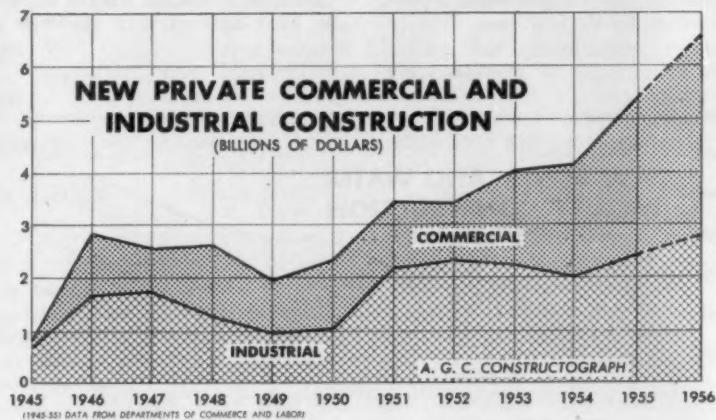
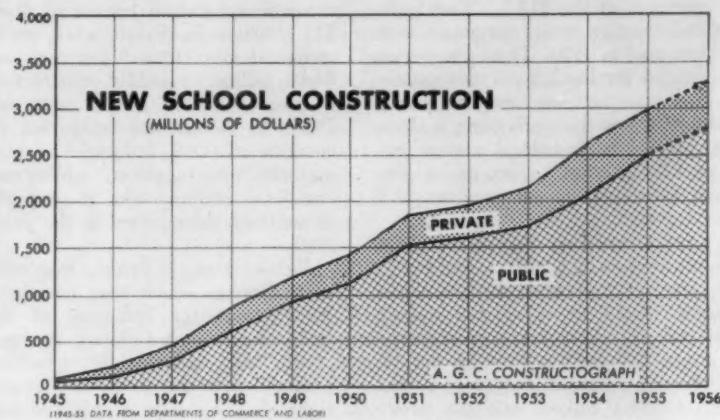
Major Categories, 1955

The \$42.2 billion volume of new construction in 1955 was more than 12 per cent above the revised figure of \$37.6 billion recorded for 1954, with private work accounting for most of the increase.

Private outlays totaled an unprecedented \$30.1 billion, more than 16 per cent over 1954, paced by a 21 per cent increase in residential expenditures to a total of \$16.3 billion, reflecting continued favorable mortgage opportunities throughout most of the year. More than 1,300,000 private residential units were placed under construction, second only to the peak year of 1950.

Industrial construction, instead of declining as predicted in most forecasts, climbed 14 per cent to \$2.4 billion under the influence of favorable profit positions and market prospects. Commercial construction, passing the \$3 billion mark, exceeded 1954 outlays by 38 per cent, and construction expenditures by privately-owned public utilities continued in record-breaking proportions of recent years, climbing slightly to \$4.5 billion.

In the lesser private categories, religious construction increased 25 per cent to \$740 million and others



with the exception of educational rose steadily, offsetting a 10 per cent decline in farm construction, which has dropped continuously since its peak year in 1952.

Local Public Works Mount

State and local public works increased their dominance in the public construction field, accounting for 70 per cent of the \$12.1 billion public construction total, compared with 65 per cent in 1954. These categories accounted for the 2.5 per cent public construction increase over last year's volume, more than offsetting a drastic reduction in federal atomic energy facility construction, and a continued decline in conservation and development.

Public education outlays increased 15 per cent to \$2.5 billion, and federal studies indicated 66,300 classrooms would be completed during the current school year, as compared with 60,000 in the 1954-55 period. Highway construction rose 9 per cent to \$4.1 billion, and the provision of sewerage and water facilities increased by 10 per cent, topping \$1 billion for the first time.

1956 Outlook by Types

The high level of construction under way at the end of 1955 provides a strong thrust for a large volume in 1956. While the rate of residential starts has begun tapering off, the outlook is bright for practically all major categories of non-residential construction.

The \$44.5 billion potential of new construction should consist of about \$31.1 billion in private work, an increase of more than 3 per cent, and \$13.4 billion in public construction, a gain of almost 11 per cent over 1955. In the private categories, the commercial and industrial volume outlooks are brightest, while state and local public works are expected to continue their ascent in the public total.

RESIDENTIAL — Private residential expenditures, which rose heavily in 1955 under the influence of new family formations and easy mortgage credit, may fall slightly to around \$16 billion as the result of a general tightening in money supply and steps taken by the government to curb credit. A somewhat similar situation in 1951 resulted in a moderate re-

duction in the number of dwellings placed under construction from the peak year of 1950. However, any early easing of mortgage opportunities in 1956 could sustain the current high level of residential construction, thereby increasing total construction volume.

BUSINESS — Projection of plans for plant and equipment expenditures into the first quarter of 1956 at the record-breaking rate of \$31.5 billion a year strengthens possibilities that industrial construction will increase 17 per cent to about \$2.8 billion, and that commercial construction will approach \$3.8 billion, an increase of about 23 per cent over 1955.

Among factors influencing industrial volume are the mammoth long-range expansion program of the steel industry and other expansion and modernization plans by such groups as cement, chemicals and automobiles.

Booming commercial construction will continue to be influenced heavily by service and shopping needs of mushrooming residential communities in the suburbs. While store remodeling and modernization may level off, the growth in new store construction should increase. For example, the National Association of Retail Grocers expects its members alone to build at least 10,000 new stores in 1956 — about 2,700 more than they constructed in 1955.

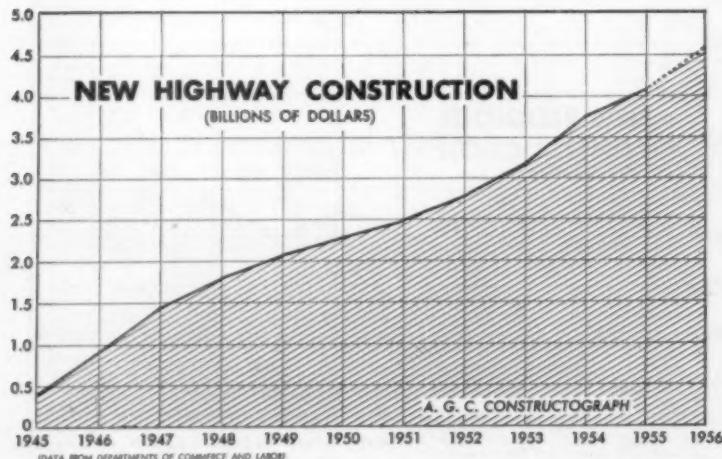
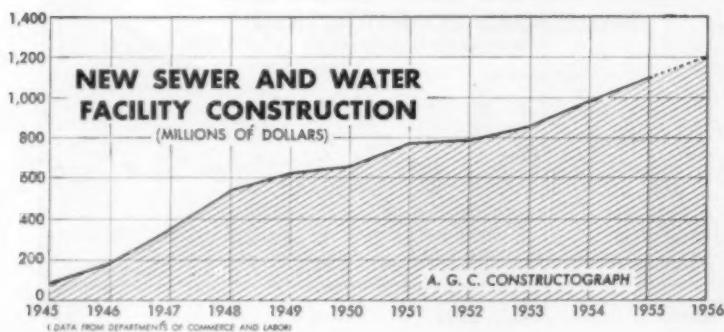
Privately-owned public utilities are expected to maintain their large volume of improvement and expansion expenditures of recent years, at the rate of about \$4.5 billion. Within this group, the largest increase is expected in railroads which apparently have planned new improvement programs after a two-year decline.

OTHER PRIVATE — In the lesser categories, religious construction, which increased 25 per cent in 1955, is expected to rise by another 22 per cent to \$900 million. Modest increases may occur in social, recreational, hospital and institutional, and miscellaneous private construction. The darkest spot in the private categories is farm construction, which may continue a decline of 8 per cent to \$1.3 billion, based on declining income.

FEDERAL — Further decreases in federal construction expenditures are anticipated by the government, principally as the result of an expected decline of more than 30 per cent in its industrial program, to about \$500 million, due to completion of a large part of its current atomic energy

(Turn to page 45)

February, 1956—CONCRETE



New age in prestressed concrete

By HARRY H. EDWARDS

**Precasting and prestressing
have placed concrete within
the competitive range of most
deck construction materials**

IN A FREE COMPETITIVE ECONOMY there are only a few motivating forces which will advance an industry. One of these forces is the ability to produce a better product and another is competitive pricing. Due to these two forces, concrete in roof and floor deck construction will soon take over as a major material of deck construction in contrast to its relatively minor role in the past.

This change is coming as a result of the concrete industry being able to furnish a better product at a competitive price. Precasting and pretensioning are the keys to cost and quality. Precasting brings mass production under controlled central manufacturing plant conditions. Prestressing brings an entirely new conception in concrete design. It enables us to provide light, long-span, resilient and flexible members which have the ability to take terrific overloads and recover without structural damage.

The trend to precast and prestressed concrete will spread to all deck construction. It will be used in warehousing, schools, store buildings and industrial construction. Eventually it will find its way into home construction on a mass production scale.

Concrete as a deck construction material has always been highly desirable. Its principal handicap, especially for roof construction, has been cost — the cost of on the job forming, pouring, finishing, and stripping. It has also had the limitation of requiring too much material for the longer spans.

Precasting together with prestressing has changed the

concrete cost picture materially, placing it within the competitive range of a great many other materials. Concrete is a desired construction material and will be specified and used in large volume if it can be economically justified. Precasting provides the cost justification.

Even if prestressing had not entered the picture, we would still see a strong trend to precasting. Now, with prestressing, the trend will become a landslide because in addition to its superior qualities, prestressing brings further economy to precasting in savings of material, both steel and concrete. Prestressing also makes it possible to precast in spans that would be completely uneconomical for poured in place reinforced concrete designs.

Economical spans in precast pretensioned concrete will be limited only by problems of delivery and erection. Both roof and floor deck in prestressing improve their competitive position for spans above thirty feet. Forty-to sixty-foot clear spans are now quite common in precast design. When made as a standardized product in mass production, these spans can be competitive with steel and timber construction.

Forming expense for poured in place concrete is usually large, often running above \$40 per cubic yard of concrete poured. The central casting plant will have a large initial capital investment in permanent steel forms. However, these forms are standardized and are designed to produce several different products. A typical double tee 400-foot-long form will cost better than \$15,000 installed, if this form can be amortized over a million square feet of product. Therefore, the forming cost per cubic yard of concrete poured will be only a fraction of that for formed-in-place concrete construction.

Efficient material handling, job specialization, repetition, standardization, and continuity of employment all favor the central casting plant. The concrete products plant will gradually grow to become one of the giant manufacturing industries, rivaling steel and automobile manufacturing for size and employment.

Design potentials are no less spectacular than cost reductions. Prestressing allows the use of the entire cross sectional area of high strength concretes. This high efficiency in the use of materials makes it possible to design a double tee concrete roof slab in spans up to 50 feet having an overall depth of only 14 inches, and requiring only 0.011 cubic yards of concrete per square foot.

Resiliency can be achieved in concrete through prestressing. A load deflection and recovery test must actually be witnessed in order to realize the wonderful new properties which concrete takes on when pretensioned.

Brittleness and the possibilities of sudden failure can be eliminated in prestressed designs. The tee section prestressed is characteristically a low stress design. Both top and bottom fiber stresses in concrete can be low and still result in good efficiencies and long spans. Overloads merely increase deflection which serves as a warning of overload. Even at ultimate load, the double tee does not collapse, and it will even recover when the ultimate load is removed. The pretensioned double tee makes a very safe design.

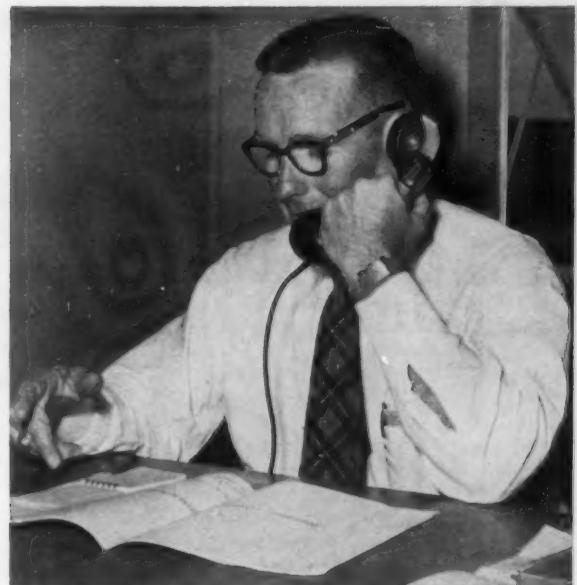
Continuity in beam design is quite feasible in a long-line pretensioning operation. Prestressing steel may be draped or sloped as desired. This is of great value to the designer, for instance in cantilever construction. The double tee may be cantilevered out as much as twenty feet.

Sloping strands will become standard design procedure for all central casting plants. Their use provides control of camber, lower concrete stresses, and reduces prestressing steel requirements.

Concrete is unquestionably entering a new age, with reduced costs and a superior product made possible through precasting and prestressing.



● Viewscope is used to show professional prospects color sequence pictures of what precast concrete is and what it does.



● "Look for favorable attention opportunities," advises Plant Manager Raymond R. Marino.

Selling Architects and Engineers Precast Concrete

By DAVID MARKSTEIN

SELLING THE IDEA of precast concrete to architects and engineers is something like making a rabbit stew, according to Raymond R. Marino. "To make a rabbit stew," he explains, "you first catch the rabbit. To sell the advantages of precast girders, columns and decks, you first catch the attention of the architects and engineers who specify. And it isn't always simple. But we have worked out a system."

Mr. Marino is plant manager of Louisiana Concrete Products, Inc.,

New Orleans. The company went heavily into precast concrete after furnishing girders, deck and support for a warehouse about a year ago. The field looked inviting, Mr. Marino says, but immediately problems appeared.

"You can't sell an *idea* readily to engineers in the same way you'd sell a product to another market," Mr. Marino points out. "You have to deal with men who are continuously busy. They have—in most cases—jobs pending or in work which command

all their attention. They can't take time to think of anything but the work immediately at hand. This governs most normal working hours of the day. If you call to sell an idea or leave literature, you're listened to politely, but you can't catch enough attention."

"Thus we have a story to tell, one of construction economy and added strength. But there are complications in the telling. So our system involves how to catch the rabbit in order to make rabbit stew."

Catching the prospect is done at hours and times when his attention isn't so exclusively occupied with matters of the moment. Trade meetings and sessions of professional engineering and architecture societies, Mr. Marino decided, were excellent opportunities. "Our man then is concerned with professional matters more in general than in particular. He's receptive to construction ideas and if a way is found to get into these sessions and get the story across, he's attentive."

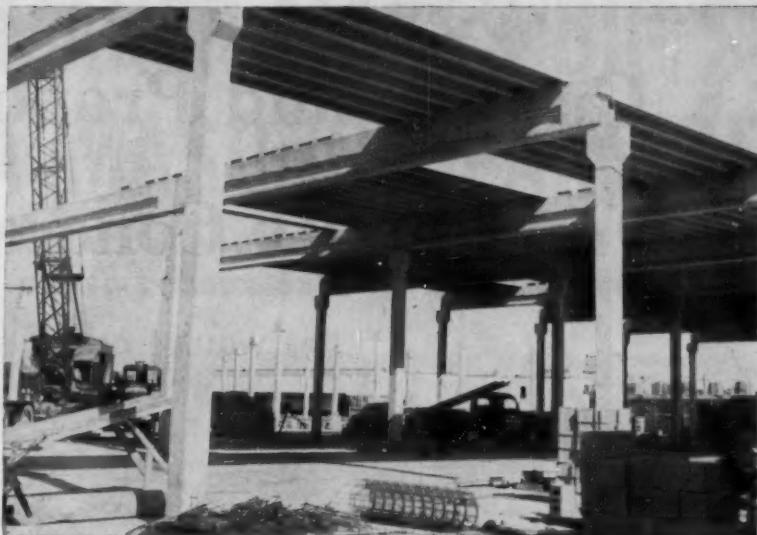
Sponsorship of monthly meetings is a gimmick Mr. Marino has adopted to get this "in." An example was a recent meeting of an engineering society. The principal speaker at the meeting was an industry expert brought over from Texas to tell about results obtained with precast concrete in Houston. He showed films of a number of projects.

"We didn't sell Louisiana Concrete Products' precast so much as the general idea and the advantages of utilization of precast concrete," Mr. Marino points out. "That way we obtained attention. We depended upon our being sponsor of the session and upon our position in the industry to assure our share of later requests to bid. The films and talk brought out the general story of precast concrete in use in the Texas metropolis.

"This session was pretty successful. It stimulated a lot of interest among engineers. Out of it we received a number of requests for further, more detailed information, and we were asked to talk things over for particular contracts."

As part of his program for seeing and selling architects and engineers during the hours when they have time to give him attention, Mr. Marino lunches daily with individuals or groups of the men who specify. Luncheon dates, he says, offer opportunity for low-pressure, fact-telling salesmanship. These lead frequently to submission of "standards"—plans previously drawn for other jobs which have features similar to ones the engineers currently have under planning. If these are close to the current job, Louisiana Concrete Products, Inc. has a good chance at the work.

Occasionally, professional prospects are invited, sometimes singly and sometimes in groups, to see completed structures that offer interesting uses of precast concrete. "Here," Mr. Marino warns, it's important to make sure you have something interesting to show. Busy engineers don't have time to look over every routine application you can bring to their attention."



● At professional society meeting, slides of construction like this were shown to sell the overall idea of precast use.



● Engineers are invited to watch precast concrete taking form in Louisiana Concrete Products' plant.



● Easy availability of precast girders, columns and deck is a big selling point—along with economy, lack of maintenance, low insurance rates and easy construction.

Grading and Proportioning For Quality Concrete Block

By WILLIAM GRANT

THE SELECTION OF A CONCRETE MASONRY UNIT will depend upon the use to which it is put, keeping in mind such characteristics as weight, strength, permeability, acoustical and insulating qualities. However, it should be remembered that a masonry unit is no better than the material used, and the know-how and determination of the manufacturer to produce a quality product.

Research has been a great boon to the industry, yet it is curious to note that despite the growing acceptance of research many block manufacturers are still committed to time-worn methods and are still unnecessarily entangled in problems for which solutions have long since been found. Science has a quaint habit of bestowing her benefits upon those who recognize their value.

A large proportion of the established industry is equipped with the requisite physical plant to meet important requirements in a substantial degree. Unfortunately, some producers fail to meet them through lack of realization of their importance, lack of basic knowledge or just plain indifference. The block manufacturer should realize that he occupies a position of responsibility to himself, to his customer and to the industry of which he is a part.

AGGREGATES — In order to obtain the best results from any type of aggregate it is necessary to pay special attention to several factors. One of the phases where control is an important factor is in the selection of block aggregates. When several sources of aggregate are available, the manufacturer should select the one best suited to furnish consistently the required gradings of material. The size and grading of the aggregate are of more importance in maintaining uniformity of quality of the concrete units, than the quality of the material itself. Careful attention to the details of handling the aggregate is necessary for production of a uniform concrete unit. Even a well balanced aggregate can become unbalanced, depending on the manner in which it is delivered to the bin.

Particle shape exerts quite a bearing on the qualities of an aggregate. Aggregate containing flat or elongated particles should not be used. The objection to particles of these shapes is their detrimental effect on the workability of the

concrete and the resulting necessity for more highly sanded mixes and consequent use of more cement and water.

Natural aggregates such as pebbles require less sand to make a workable concrete than do aggregates that are obtained by crushing rock. In the latter case the sharp irregular particles require an over sanded mix in order to obtain workability. The important characteristics of aggregates are cleanliness, durability and grading.

CLEANNESS — Aggregates, to be suitable for making concrete units, must be clean and free from clay, loam, silt or organic matter the presence of which reduce the strength of the concrete. A film of clay or other foreign matter on the particles of the aggregate prevents the proper bonding of the aggregate with the cement-water paste, thus producing a lower strength concrete unit.

DURABILITY — Aggregates must be free from soft, friable particles which will disintegrate under exposure to weather conditions. If an aggregate fails to meet these requirements it is worthless regardless of its other qualities.

Shales, sandstones and very soft limestones are unsuitable as aggregate for concrete products. Shale is unsuitable because of its weak stratified structure, sandstone on account of its friable nature and limestone when it contains a high clay content. An aggregate possessing any of these properties may be inherently weak or may deteriorate through saturation, alternate wetting or drying, freezing or temperature change.

GRADING — Well graded aggregates are essential to the production of economical concrete. Poorly graded aggregate will produce a low strength concrete or require an excess of cement to obtain the necessary strength.

In natural gravel deposits it is practically impossible to obtain aggregate so graded in size as to produce a mix of minimum density without regrading. In order to obtain maximum density, aggregates are divided into various sizes, which may be blended in varying proportions to produce concrete units of the desired strength.

The importance of well graded aggregate cannot be over-emphasized, particularly from the standpoint of economy. The character and grading of the aggregate play an important part in the quantity of cement required and in the

BIG BLOCK MAKER MAKES BIG \$ ON MEDUSA MASONRY PAINTS!

**RUF-SEAL CEMENT PAINT • PORTLAND CEMENT PAINT
FLAT RUBBER BASE • GLOSS RUBBER BASE • CLEAR SILICONE**



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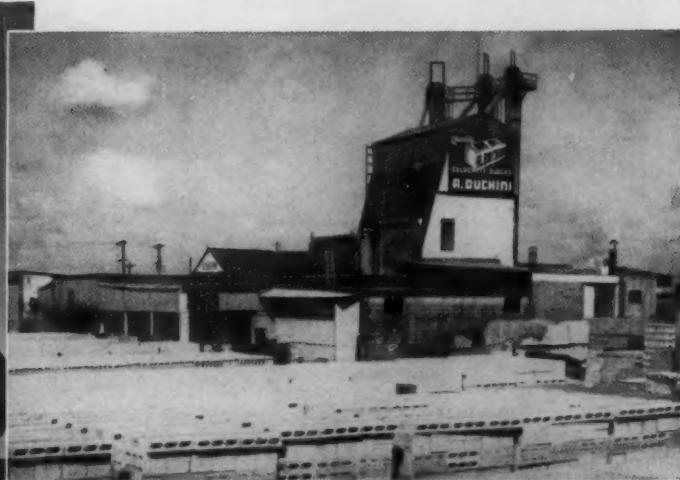


Photo shows Panoramic view of the large stock and the modern A. Duchini block manufacturing plant, Erie, Pa. Plant has capacity of over 1,300,000 blocks per year; has serviced Pennsylvania, Western New York and Ohio area for over 23 years.

Mr. Duchini says:

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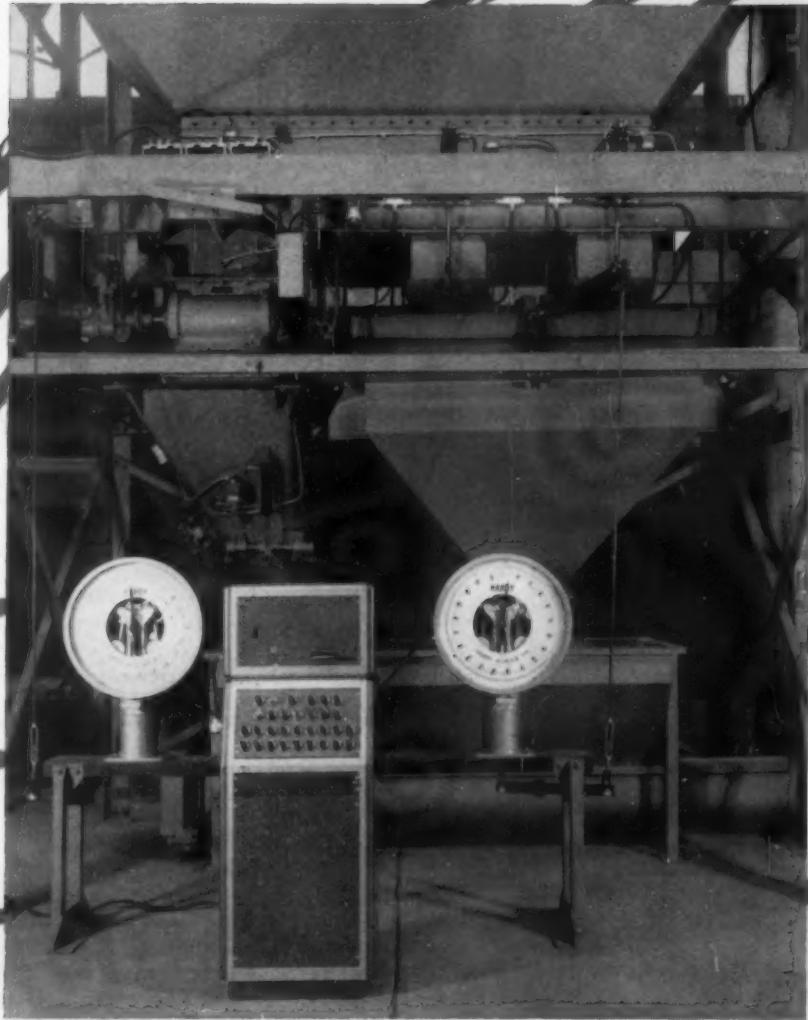
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There are more than 8,000,000 batch combinations—each selected instantaneously. It has automatic and integrated moisture compensation.

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Cards can be used to keep your books, simplify accounting, billing, inventory control, cost analysis, etc., with a reduced office staff.

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No electronic nightmare, but a small filing cabinet-size unit that can be placed any distance from weigh batchers.



UNITIZED FOR EASY MAINTENANCE

Electronic System is grouped and sectionalized for ease of maintenance.

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With all its exclusive features, the new Helco-matic Batchmaster actually costs less than any other plant of its kind.

MEETS ALL SPECIFICATIONS

Entire system is completely federal and state

SEE IT AT THE SHOW!

You can see a full scale working unit of the revolutionary new Helco-matic Batchmaster at the Ready Mix Show in Chicago on Feb. 13, 14, 15 and 16. Make a note to stop by Booths 285, 286, 287 and 288, or contact the Heltzel Steel Form and Iron Co., 1750 Thomas Rd., Warren, Ohio for complete details.

NATURALLY IT'S

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quality of the concrete after it has solidified. If the grading of the aggregate varies from batch to batch, the quality of the concrete will likewise vary unless each mix is proportioned differently. Such a procedure is highly impractical. Consequently, some batches will be below strength requirements, while other batches will be stronger than necessary. Under these varying conditions, the same amount of cement would be in use in a mix of poor quality aggregate as would be used where the grading of the material is satisfactory. In the latter case, this would result in the concrete being of higher strength than necessary, indicating a wastage of cement.

Lightweight aggregate materials may be classified into three divisions; natural, by-product and manufactured. Natural lightweight aggregates are of volcanic origin and include such materials as pumice, perlite and some cinders. By-product aggregates include cinders from power plants and processed slag from steel mills. Manufactured lightweight aggregates are produced from clays or shales.

The physical properties of the aggregate should be given especial attention, since in lightweight concrete high absorption, irregularities in the shape of the particles, and low density are factors which must be considered in the determination of the final grading. For this reason it is impractical to recommend a specific grading suitable for all types of lightweight aggregates, since too many variables exist in the aggregates as commercially used.

The particles of the aggregate should be sufficiently strong to withstand abrasion, vibration and tamping. When the particles are broken down in the mixer or in the mold box, the tendency is to reduce the fineness modulus and the strength and to increase the weight of the block.

Most lightweight aggregates have high water absorptive qualities. For this reason certain precautions should be taken when processing such aggregates. The water content must be carefully controlled. Many failures of lightweight aggregate block can be attributed to this cause. The amount of water necessary for a mix is governed to a great extent by the absorptive qualities of the aggregate. The volume of water required in some instances may be several times the amount necessary for sand-gravel aggregate mixes. The aggregate should be presaturated with about 75 per cent of the total required mixing water, either in the stockpile or in the mixer before the cement is added.

Generally, more cement is required to produce compressive strengths equivalent to those of dense concrete mixes. In lean mixes of lightweight concrete the factors of workability and segregation may be improved by plasticising agents.

When sand is substituted in the mix to the extent of 25 per cent by volume, the units will weigh approximately 30 pounds. When sand is substituted it is important to remember to compensate for the difference in weight of the sand as compared with the lightweight aggregate used.

In a 50 cubic foot mixer the substitution of 25 per cent of sand for lightweight aggregate (burned clay) would mean that 12.5 cubic feet of sand would replace 12.5 cubic feet of the lightweight aggregate. Where the sand weighs approximately 100 pounds per cubic foot and the lightweight aggregate weighs 60 pounds per cubic foot, 1250 pounds of sand would be substituted for 750 pounds of lightweight aggregate.

Following are approximate weights of units made from burned clay aggregate alone and also containing varying proportions of coarse and fine sand.

Type of Mix	Dry Weight of Unit
Burned clay aggregate only	26 lbs.
Burned clay aggregate and 12.5% mixed sand	28 lbs.
Burned clay aggregate and 25.0% mixed sand	30 lbs.

This emphasizes the need for being very careful in determining the proportions of material where aggregates of different weights per cubic foot are used. The proportioning is basically in terms of volume, but the volume must be translated into weight per unit volume so that the correct amount of each material is used.

Aggregates are usually classified by an arbitrary division of coarse and fine. Generally, in block manufacture, material passing the $\frac{3}{8}$ -inch sieve and remaining on the No. 4 sieve is designated as coarse aggregate. It is well to bear in mind that, other things being equal, a coarse grading of aggregate produces stronger concrete than a fine grading of aggregate. Therefore, the ideally graded aggregate is that mixture which contains as much coarse material as can be used, short of producing harshness in the mix and a too rough textured block.

Fine aggregate is usually considered as that material which will pass a No. 4 sieve. At least 15 per cent should be retained on a No. 8 sieve. Excessive quantities of extremely fine sand are undesirable. Approximately 15 per cent of the material passing the No. 48 sieve and 5 per cent passing the No. 100 sieve is needed to increase the density of the concrete. Such a mixture produces a smoother block than one in which there is a deficiency of fines.

The following data shows the various gradations of sand and coarse aggregate (pea gravel) and the fineness modulus or F.M. of each.

I Fine drift or beach sand graded up to the No. 28 sieve with an F. M. of 1.50.

II Medium sand graded up to the No. 8 sieve with an F.M. of 2.50.

III Coarse sand graded up to the No. 4 sieve with an F. M. of from 3.00 to 3.25.

IV Coarse aggregate graded from the No. 4 to the $\frac{3}{8}$ -inch sieve with an F. M. of approximately 5.50.

Gradation of aggregate* is easily and accurately measured by means of screen analysis. The method is to screen a dried and weighed sample of the aggregate through a series of sieves, the proportion of the total sample retained on each sieve being weighed. In this way the range of size particles or the gradation is obtained.

The fineness modulus is an index number which is roughly proportioned to the average size of particles in a given aggregate; thus, the coarser the aggregate the higher the fineness modulus will be.

Fineness modulus is computed by adding the cumulative percentages coarser than each of the following specific standard sieves: $\frac{3}{8}$ inch, 4, 8, 14, 28, 48 and 100, and dividing the sum by 100. If 100 per cent is retained on any sieve, each successive sieve being smaller would necessarily retain 100 per cent of material. Hence, 100 per cent must be added for each of the smaller sieves used.

Although fineness modulus does not distinguish between a single-size aggregate and a graded aggregate having the same average size, it is useful in connection with normally graded aggregate. It may be used for setting forth specifications, for record purposes and for controlling grading and uniformity.

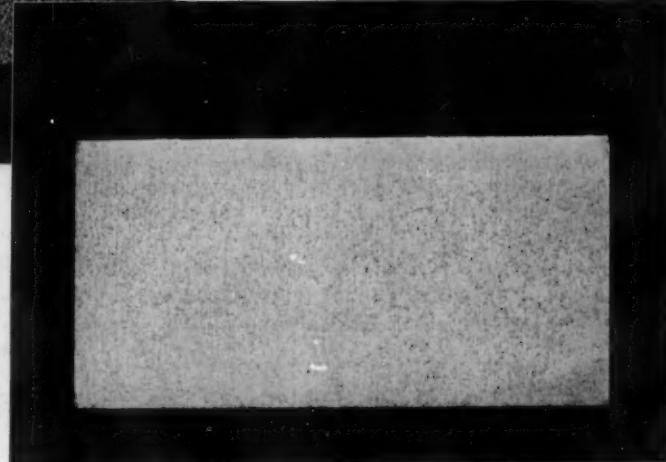
APPLICATION OF GRADING PRINCIPLES — The sieve analysis and fineness modulus are employed to evaluate an aggregate for its suitability from the standpoint of its grading. When plant conditions permit the handling of separate aggregates, the producer is in an enviable position.

Once the producer has decided upon a definite blend of coarse, medium and fine aggregate, he can manufacture a quality block with a minimum amount of cement.

*Detailed in Manual "Manufacture of Concrete Masonry Units", pages 57-61.



ORDINARY BLOCK Without NR PLASTIC—
ROUGH FINISH, DARK COLOR



IMPROVED BLOCK* With NR PLASTIC—
SMOOTH FINISH, LIGHTER COLOR

* Manufactured at HOERNING'S CONCRETE PROD.
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With
JUST **ONE** TABLESPOON OF
DRY, POWDERED
NR PLASTIC
PER BAG OF CEMENT!

**GREATER PLASTICITY IN THE GREEN UNIT —
PLUS 20% LIGHTER COLOR . . .**

Cost . . . $\frac{1}{2}$ c per Bag of Cement!

Hydrate ALL the cement in your dry block and pipe mix . . . with just *one* tablespoonful of dry, powdered NR PLASTIC per bag of cement. Cost $\frac{1}{2}$ c per bag!

YOU'LL GET

A 20% lighter colored unit with a more thoroughly wetted cement paste! Complete hydration through complete saturation without adding more water! Sharper

corners . . . better texture . . . smoother, denser surfaces through greater compaction! Faster, cleaner feeding into . . . and stripping from . . . the mold box! 50% reduction in wear on mold box liners! Greater plasticity in the green unit through absolute dispersion of water and cement . . . and . . . complete coating of all the aggregate particles! Simple and economical to use . . . add dry as it comes from the container! Cost $\frac{1}{2}$ c per bag of cement!

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Gentlemen, Please RUSH Sample of NR PLASTIC

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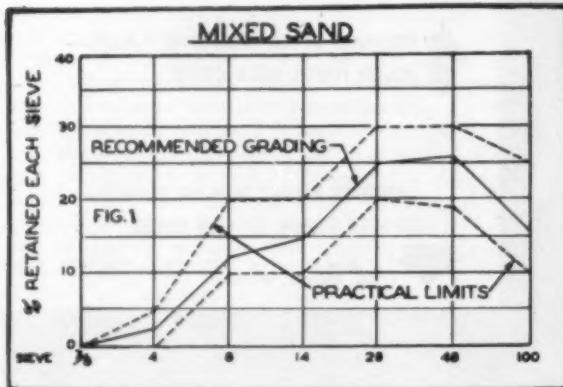


Figure I

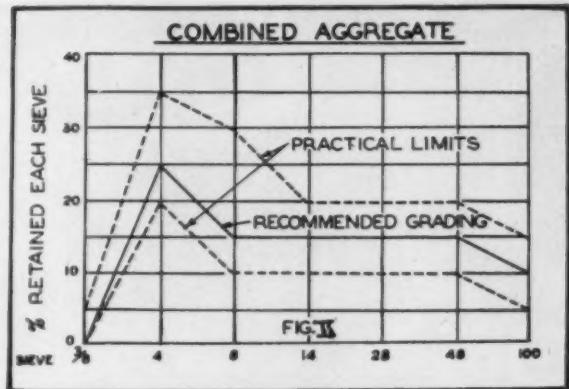


Figure II

For a mixed sand and combined aggregate for plant use, the percent retained on the separate sieves should approximate the limits shown in Tables I and II. The same data are presented graphically in Figures I and II above.

TABLE I—RECOMMENDED GRADING FOR MIXED SANDS

Sieve Size	Percent Retained on Separate Sieves	Grading
1/8 in.	0	0
4	0.5	2.5
8	10-20	12.5
14	10-20	14.0
28	20-30	24.0
48	18-30	26.0
100	12-25	16.0

TABLE II—RECOMMENDED GRADING FOR COMBINED AGGREGATE

Screen Size	Percent Retained on Separate Sieves	Grading
1/8 in.	0.5	0
4	20-35	25.0
8	10-30	15.0
14	10-20	15.0
28	10-20	15.0
48	10-20	15.0
100	5-15	10.0

Natural sand is the most widely used fine aggregate. It is important to make sure that the sand is not too fine. An exceedingly fine or flat sand will require more cement than a coarser sand without increasing the strength of the resultant concrete. Also, when the sand particles are all approximately the same size, the strength of the concrete made from such sand is not as great as when the particles are of different sizes.

In well graded aggregate the particles vary in size from the smallest to the largest. The fine particles are necessary for workability and smoothness of mix. Workability of the concrete block mix is influenced by the gradation, as well as the surface and shape of the aggregate particles.

The amount of coarse aggregate in a concrete mix has a marked effect on its workability. When the particles are separated by mortar they have the opportunity of motion. Since this is accomplished by the use of sufficient mortar in the mix, the greater the volume of mortar, the more workable will be the mix.

Since sand has a greater surface area, the greater the quantity of sand above that necessary for workability, the greater will be the amount of water required for a given

consistency. Therefore, just enough sand to accomplish the desired workability should be used.

It is well to remember that the cement-water ratio as such cannot be used in products plants because the concrete produced is on the dry side. A good general rule to follow, however, is to use as much water as possible without allowing the product to slump. It will probably be found that with thorough mixing this amount of water will result in the maximum utilization of the cement.

Since cement is the most expensive material contained in the concrete mix, it is important that it be used intelligently. In order to eliminate wasteful practices and produce a strong concrete with the minimum cement, it is necessary to use an aggregate in which the various sizes of the material are properly proportioned.

Each of the various sized particles of the coarse and fine aggregate should be present in sufficient amount to fill the spaces between the particles of the next larger size. Thus satisfactory grading is obtained which results in a concrete mix of such density that minimum voids are present. Then the function of the cement is simply to coat the particles adjacent to each other, resulting in the most economical mix producing maximum strength concrete with the least amount of cement.

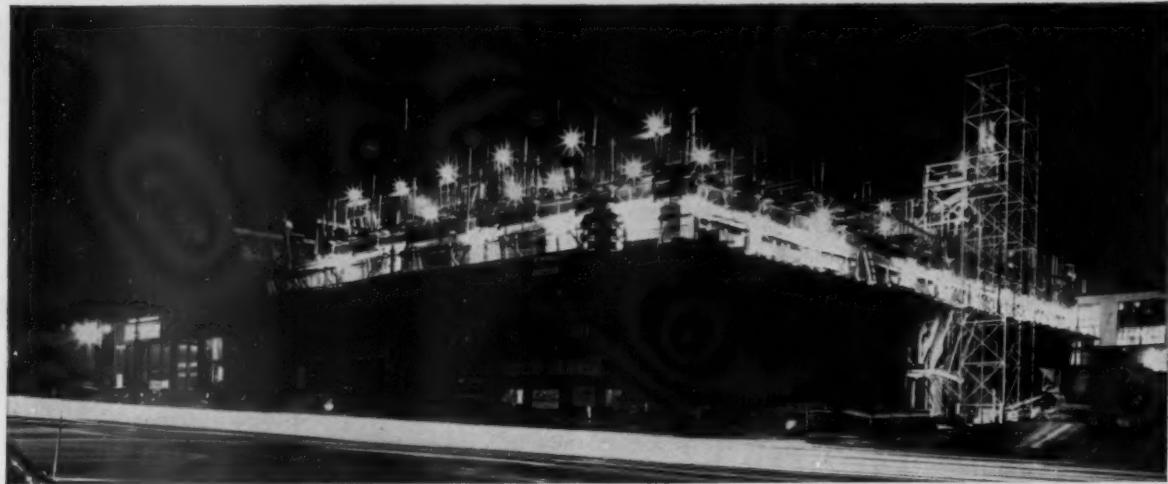
A strong economical concrete cannot be produced from a mix containing an excess of fine material because the smaller the particles in a given volume of aggregate, the greater will be the surface area to be coated with cement paste and consequently more cement will be required to bind the mass.

Thus by careful attention to the grading of the aggregate a concrete of equal or greater strength may be produced from a smaller amount of cement than one from a richer mix in which the aggregates are improperly graded.

Where lightweight aggregate is used it may be necessary to sacrifice some of the unit strength in order to obtain lighter weight and better textural, acoustical and insulating qualities. This is accomplished by reducing the density of the aggregate combination through a reduction of the percentage of fine material.

If an aggregate is poorly graded, it means that it either contains too much coarse material or an over abundance of fines. A coarse aggregate has less total particle surface per unit volume than a well-graded aggregate. Coarse material, while presenting less surface area, introduces bridging, which tends to lessen the resultant strength of the units. Aggregate containing an excessive amount of fines requires more careful handling through all phases of operation to eliminate undue breakage because of the reduction of strength of the "green" units.

It is advisable that the manufacturer install the necessary



THREE 50-MAN CREWS, working around the clock, placed the reinforcing, placed and tamped concrete, set windows and doors.

Apartment building poured with slip-forms in 114 hours

THE SLIP-FORM METHOD so successfully used on silos and grain elevators worked equally well on this 10-story apartment building. Because the basement and two lower floors are designed for open parking, they were built by conventional methods. The exterior walls, corridor walls and partition walls for the

upper 8 stories were then erected by one continuous pour to slip-forms, completed in 113 hours and 55 minutes. The roof slab was poured next and the floors were then poured from the top down.

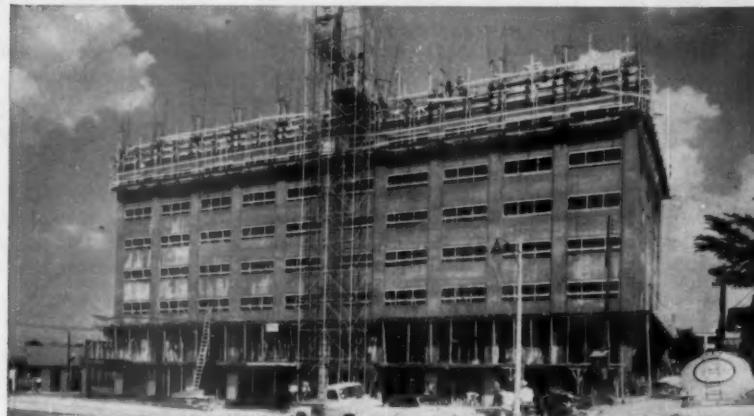
A continuous 150' x 80' platform supported the wood slip-forms, which were 3'6" deep and of 7½" inner width. Hy-

draulic jacks raised platform and forms at a rate that began at 9" and eventually reached almost 30" an hour.

Success required the accurately scheduled and uninterrupted delivery of 2100 cubic yards of concrete having the closely controlled strength and slump needed to support successive layers while still damp enough to allow all forms to slip under jacking pressure. This requirement was met by using ready mixed concrete, processed in truck mixers of certified design, capacity, mixing speed and water control accuracy.



You have a right to insist on this Rating Plate. It certifies compliance with the high industrial standards maintained for your protection by the Truck Mixer Manufacturers Bureau.



Madison Towers, Memphis, Tennessee. John H. Doggett, architect; S. S. Kenworthy, engineer; Southern Builders, Inc., contractor.



Truck mixers delivered to 1½-yard bucket in double well elevator.

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WORTHINGTON CORPORATION

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TABLE III — SIEVE ANALYSIS OF AGGREGATE

Screen	Gravel				Sharp Sand				Flat Sand			
	Cumulative Grams	% Retd. each	% size	Passed	Cumulative Grams	% Retd. each	% size	Passed	Cumulative Grams	% Retd. each	% size	Passed
3/8"	10	1.0	1.0	99.0	0	0	0	100.0	0	0	0	100.0
# 4	700	70.0	69.0	30.0	10	1.0	1.0	99.0	3	.3	.3	99.7
# 8	950	95.0	25.0	5.0	120	12.0	11.0	88.0	6	.6	.3	99.4
# 14	982	98.2	3.2	1.8	338	33.8	21.8	66.2	15	1.5	.9	98.5
# 28	995	99.5	1.3	.5	610	61.0	27.2	39.0	100	10.0	8.5	90.0
# 50	998	99.8	.3	.2	910	91.0	30.0	9.0	435	43.5	33.5	56.5
# 100	1000	100.0	.2	0	970	97.0	6.0	3.0	930	93.0	49.5	7.0
Pan								3.0				7.0
Fineness Modulus	5.64				2.96				1.49			

equipment to test thoroughly the aggregate for its suitability, remembering that aggregate received from different sources is likely to vary considerably. It may even pay a block manufacturer to use a more expensive, but better graded aggregate.

A record should be kept of the sieve analyses of the aggregate received at the plant and data pertaining to the mixes. From such information the operator will be in a position to readjust quickly his mix proportions as conditions demand.

A systematic method of expressing the quantities used should be employed, if comparisons are to be made. It is usual to express the proportions as volumes of dry materials with cement as a basis. The amount of mixing water is generally expressed in gallons per 94 pound sack of cement.

For regular production purposes proportions should be computed on a basis of dry material by weight. One advantage of weight proportioning is the ease of making allowance for the moisture content of the aggregate. However, whether measurement by weight or volume is used, it is important that operations be conducted with maximum accuracy.

An outline of suggested ranges of trial mixes for various types of aggregates and their proportions in relationship of cement to total aggregate follows:

Type of Aggregate	Range of Mixes
Gravel — Sand	1 - 8 to 1 - 12
Cinders	1 - 6 to 1 - 8
Clay (expanded)	1 - 6 to 1 - 9
Limestone	1 - 7 to 1 - 12
Pumice	1 - 4 to 1 - 6
Slag (expanded)	1 - 5 to 1 - 7
Slag (air cooled)	1 - 8 to 1 - 12

A direct method of test which reproduces actual conditions is always preferable to an indirect test based on assumptions which may be subject to variation. The result desired in proportioning concrete is a mixture of maximum

density. The most direct means to this end is the testing of trial mixtures.

Some years ago the writer in collaboration with Benjamin Wilk, Standard Building Products Company, Detroit, decided upon a series of experiments in order to develop a practical grading for sand-gravel aggregates that would produce the best concrete for the least money. Some of these findings were published in *Rock Products*, February 1947 and February 1948. To ascertain the influence of grading of aggregates on the strength of concrete an extensive series of controlled laboratory experiments was undertaken to determine:

I A good grading for general plant practice.

II To ascertain the influence of fine sand additions on various mixes.

III To determine at what point the fine sand began to show weakening effect on the concrete.

Special attention was given to water additions, plasticity of mix, mixing time, thoroughness of mixing, manner of filling the 3- by 6-inch cylinder molds, and length of time of vibration. The consistency of the concrete used in the cylinders approximated as closely as possible the consistency used in plant practice. The cylinders were vibrated on a specially designed controlled apparatus. For details of this apparatus see *CONCRETE*, December 1950.

Compression tests were made at 28 days, after curing cylinders in water for 21 days and drying to constant weight. The testing machine was adjusted to a capacity of 30,000 pounds. After the compression tests the broken specimens were studied to determine by observation the effect of varying amounts of fine material in the mix.

The grading and fineness modulus of the aggregates used throughout the series is indicated in Table III.

The amount of cement used was in the ratio of one part high-early-strength cement to 10.5 parts aggregate, or the equivalent of 300 pounds of cement to 3150 pounds of mixed aggregate, as in plant practice.

In these experiments the coarse aggregate and sharp sand were kept in balance with each other, with the fine

TABLE IV — EFFECT OF GRADING AND PROPORTIONING ON STRENGTH OF MOLDED CONCRETE

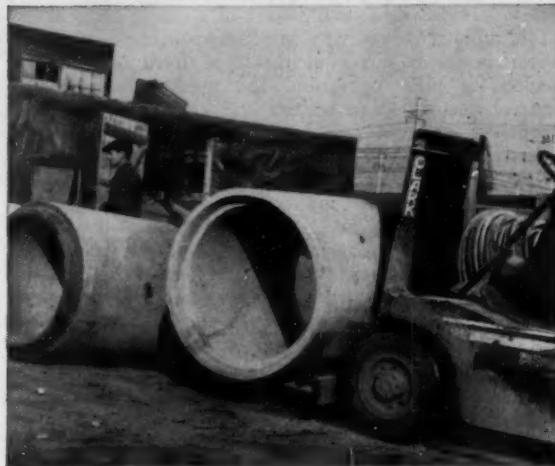
Test No.	Gravel	Sharp Sand	Fine Sand	F.M. of Mixed Agg.	Gravel	Sharp Sand	Fine Sand	Ave- rage (12 tests)	
								# batch	P.S.L.
1	500	500	0	4.30	50.00	50.00	0	26.4	3440
2	475	475	50	4.16	47.50	47.50	5.00	26.4	3395
3	450	450	100	4.02	45.00	45.00	10.00	26.4	3404
4	425	425	150	3.88	42.50	42.50	15.00	26.4	3462
5	400	400	200	3.74	40.00	40.00	20.00	28.3	3215
6	375	375	250	3.59	37.50	37.50	25.00	28.3	2654
7	350	350	300	3.44	35.00	35.00	30.00	28.3	2180
8	325	325	350	3.30	32.50	32.50	35.00	28.3	1858
9	300	300	400	3.16	30.00	30.00	40.00	30.2	1535
10	275	275	450	3.02	27.50	27.50	45.00	32.1	1398

better concrete faster and cheaper with COLUMBIA CALCIUM CHLORIDE

Making a Calcium Chloride solution at ready mix plant
for automatic dispensing



Precast concrete pipe made with Calcium Chloride
is ready for quick shipment



IN READY MIX

Ready mix producers can render a genuine service to customers by recommending the use of Columbia Calcium Chloride—especially at temperatures below 70°F. when the set and strength of plain concrete are greatly retarded.

You can add Columbia Calcium Chloride to the mix either at your plant, or on the job. Columbia Calcium Chloride is easily controlled in either flake or liquid form. Here's what it does for your customers:

- Makes initial and final set three times faster
- Increases workability
- Increases early and ultimate strength
- Releases forms faster for re-use
- Cuts down on overtime
- Helps meet work schedules

Start now! Recommend the addition of Columbia Calcium Chloride to your ready mix customers.

IN CONCRETE PRODUCTS

Whether your concrete products are blocks, pipe, precast or prestressed units, the use of Columbia Calcium Chloride will improve production and lower manufacturing costs. Here are some of the advantages:

- Reduces time required for initial set
- Gives higher early strength
- Reduces curing time
- Reduces cracking
- Allows for quicker handling
- Reduces breakage
- Permits earlier shipping

These advantages are especially important during cold weather. Calcium Chloride is not an anti-freeze, but the time required for protection in freezing temperatures is shortened, often as much as 50 percent. Columbia Calcium Chloride works equally well with normal, air-entrained and early high strength cements.

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WHETHER YOUR INTEREST IS IN READY MIX OR CONCRETE PRODUCTS

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sand content as the variable component of the mixes. The total amount of sand in each mix was increased by the addition of fine sand in increments of 50 parts or 5 per cent, while the gravel and sharp sand contents were decreased by 25 parts or 2.50 per cent each.

A study of Table IV shows that the coarser mixes produce the greater strength concrete. However, since they also produce a range of rough textured concretes, it is necessary to have a certain amount of fine sand present to smooth out the texture.

A visual examination of the specimens after compression tests (see Table IV) revealed these facts.

Tests numbers 1, 2, and 3 were of a coarse texture.

Test number 4 was very satisfactory in all respects. In several instances mixes of this type have been recommended for plant operation. The results obtained have been satisfactory as to texture and compressive strength of units.

Test number 5, in which the mix proportions were 40 per cent gravel, 40 per cent sharp sand, and 20 per cent fine sand, produced a good strength and marketable product. The increase of total sand content coupled with the additional fine sand causes the latter to show its presence in the concrete. If a sandy appearing block is desired, this mix would be satisfactory from strength and textural standpoints. A feature of test number 5 shows that this is the high limit of fine sand from which good compressive strength and texture can be obtained.

In tests number 6 to 10, by the addition of more fine sand up to a total of 45 per cent in increments of 50 parts or 5 per cent, with corresponding reductions of the other constituents of the mixes, a marked decrease in strength of the concrete is noted, until at 45 per cent fine sand addition the concrete showed a compressive strength of only 1398 psi. It is thus evident that when too much fine sand is used, strengths are decreased considerably and cement is wasted. The difference in strength between tests number 9 and number 5 is approximately 50 per cent.

While an exact 40-40-20 parts mix is not easily obtained in practice, approaching it as closely as practicable will improve the quality and strength of the product. The successive decrease shown in the compressive strengths of the various mixes in Table IV can be attributed entirely to the increasing use of fine sand. Therefore, the percentage of fine sand should be kept as low as possible. If used in excess it will lower the compressive strength of the units.

One point must be stressed, however, with reference to the grading of the mixed aggregate; that is, a certain amount of fine material, approximately 5 per cent passing the 100-mesh sieve and 15 per cent passing the 48-mesh sieve, is needed.

From the results of the various tests compiled in Table IV, it would seem that by using three separate materials, such as coarse aggregate (pea gravel) coarse and fine sand, a combination of aggregate may be obtained which will give satisfactory strength concrete at a minimum cost.

It is interesting to compare the actual combined grading of test number 5 (3.74 F.M.) with a proposed theoretical grading shown in Table V, in which 25 per cent of the aggregate remains on the 4-mesh sieve and 15 per cent remains on each of the next four sizes of sieves. There would be 85 per cent on the 48-mesh sieve, 95 per cent on the 100-mesh sieve, and 5 per cent through the 100-mesh sieve.

The theoretical grading of 3.70 F.M. is based on tests made by A.C.I. Committee 710 and reported in the *A.C.I. Journal*, 1936.

Experience has demonstrated that a very fine or very coarse sand or aggregate, having a large deficiency or ex-

TABLE V — ACTUAL COMBINED AND THEORETICAL GRADING OF AGGREGATES

Sieve Sizes	Actual Combined Grading Test #5		Proposed Theoretical Grading*	
	% Retained	% Passing	% Retained	% Passing
	Cumulative Percent	each screen	Cumulative Percent	each screen
# 4	28.5	28.5	71.5	25.0
# 8	42.9	14.4	57.1	40.0
# 14	53.0	10.1	47.0	55.0
# 28	66.2	13.2	33.8	70.0
# 48	85.0	18.8	15.0	85.0
# 100	97.4	12.4	2.6	95.0
Fineness Modulus	3.75			3.70

*The same data is presented graphically in Figure 3.

cess of any size, is generally undesirable, and that aggregate having a smooth grading will produce more satisfactory concrete.

In order to compare the compressive strength with specimens made from a mix as outlined under theoretical grading, a series of 3- by 6-inch cylinder tests was conducted in which all conditions of mixing and molding closely approximated those of the experimental series. The average compressive strength of 24 specimens made from a mix with theoretical grading was 3488 psi, compared with a strength of 3215 psi obtained in experimental test number 5 (Table IV).

From these experiments came two conclusions:

I A range of fineness modulus from 2.50 to 2.90 for mixed sands may be successfully processed in conjunction with coarse aggregate ranging from 5.0 to 5.50 fineness modulus.

II For the combined aggregate, a range of 3.50 to 3.70 fineness modulus is recommended. Some manufacturers have found it more economical, however, to use a combined aggregate ranging from 3.70 to 4.00 fineness modulus.

The problem confronting the individual manufacturer is to produce a uniform product from the local aggregate at the lowest operating cost. This factor may be solved by careful study of the aggregates and testing units from trial batches made under plant conditions.

The method of proportioning aggregate for concrete block is determined by choice or necessity. It may be done either by volume or by weight. In all cases, however, the effect of moisture in the materials must be considered.

In proportioning by volume, it is an established fact that serious error may be introduced into the measurement of the aggregates if the bulking of the materials is disregarded. For coarse aggregate, this factor is negligible, but for sand or other fine material it becomes an important consideration.

The quality and uniformity of concrete units varies because of a number of factors, some of which are readily identified and controlled. Between the acquisition of the aggregate at its source and its actual fabrication into the finished product, many things can happen. Constant vigilance and meticulous attention to detail are required.

DID YOU KNOW?

The modular coordination program has gone far toward the elimination of needless confusion and waste in the building field? Modular measure has made it possible to reduce the number of listed sizes of windows from 1,406 to 659 and of sash from 1,710 to 797.

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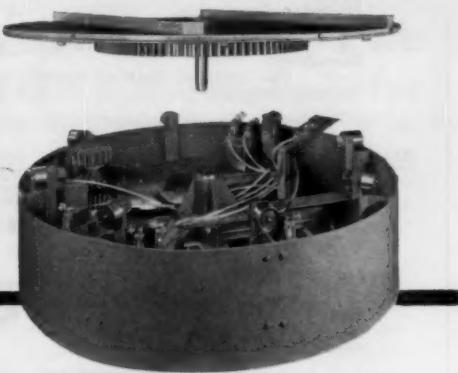
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THE BALANCE SHEET—

What it Means

HERE ARE MANY businessmen and executives who must use financial statements, such as the balance sheet and profit and loss statement, for the intelligent management of their business. Yet it is quite surprising to learn that many of these people, who must make decisions based upon such financial statements, do not understand them at all. In some instances they view such reports as a completely mysterious tabulation of numbers which the accountants through some magic have

thrown together. In other instances they simply do not understand the terminology that accountants use.

The most important point to remember is that the items appearing on financial statements are more than just numbers. They represent such important things as cash in the bank, and investment in plant and equipment. In this article we shall discuss the balance sheet and what it means.

A balance sheet is a statement depicting the financial condition of a business enterprise as of a specific

date. The balance sheet is broken down into three main sections: assets, liabilities and capital. Assets are the properties, both real and personal, that the firm owns. Liabilities represent the amounts owing to others. Capital is the owner's equity in the business.

Let us now take a simple balance sheet and analyze it so that it will make sense even to persons who have no training in accounting. Please refer to the accompanying sample balance sheet.

Cash represents the amount of money on deposit in the bank. At least in theory you could, if you wished, draw a check to cash for the amount shown on the balance sheet.

Accounts receivable is the amount of money that customers owe you for the sale of merchandise or for services rendered. The money has not been collected since most sales are made on credit terms, usually thirty days. Just below the accounts receivable figure you will see an account termed reserve for bad debts or allowance for uncollectable accounts. This is an entry that accountants find difficult to explain to clients. Most businessmen realize that when they sell on credit, they will not collect all the money that customers owe them for such reasons as inability to pay debts, and disputed charges. Experience indicates that out of a large number of accounts receivable, a certain number and dollar amount will not be collected. However, we can't identify which of the accounts comprising the total of accounts receivable will not be collected. If we knew which accounts were uncollectable, they would be written off and hence not included as assets. But we don't. Therefore we make an estimate by various sorts of analysis of what the amount of uncollectable accounts will be. This estimate is termed the reserve for bad debts or allowance for uncollectable accounts.

The next major item of importance appearing on a balance sheet is inventory. Inventory is probably the most difficult item to value, yet it is one of the most important items ap-

YOUR COMPANY, INC.		
BALANCE SHEET		
DECEMBER 31, 1954		
<u>ASSETS</u>		
<u>CURRENT ASSETS</u>		
Cash		\$ 30,000
Accounts Receivable	\$ 45,000	
Less: Allowance for Uncollectable Accounts	<u>5,500</u>	39,500
Inventory (At lower of Cost or Market)		72,000
Prepaid Expenses		<u>1,500</u>
TOTAL CURRENT ASSETS		\$143,000
<u>FIXED ASSETS</u>		
	<u>COST</u>	<u>RESERVE FOR DEPRECIATION</u>
Land	\$ 10,000	\$ —
Building	50,000	15,000
Equipment	20,000	7,000
Automobiles	3,000	1,000
Totals	\$ 83,000	\$ 23,000
		<u>BOOK VALUE</u>
		\$ 60,000
TOTAL ASSETS		\$203,000
<u>LIABILITIES AND CAPITAL</u>		
<u>CURRENT LIABILITIES</u>		
Accounts Payable		\$ 45,000
Notes Payable - Bank		10,000
Federal Income Taxes Payable		15,000
Accrued Expenses and Taxes		<u>3,000</u>
TOTAL CURRENT LIABILITIES		\$ 73,000
<u>CAPITAL</u>		
Common Stock, \$ 100 par value		
Authorized 1,000 shares		
Issued 500 shares		\$ 50,000
Earned Surplus		
Balance, January 1, 1954	\$ 55,600	
Add: Net Profit For Year		
Ended December 31, 1954	<u>24,400</u>	
Balance, December 31, 1954		<u>\$80,000</u>
TOTAL CAPITAL		\$130,000
TOTAL LIABILITIES AND CAPITAL		\$203,000

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This is a one piece tank, pours and strips upright. All sections assembled with wedge bolts for easier stripping. Handled by 2" holes in wall directly on center of each side 19" down from top, this lets your hoist go down into tank and eliminates the need for a high rig.

Form includes: Pouring Pan, three section septic tank lid pans and pick up bar for handling. Inside form has tapered wedge strips in each corner that slide out easily allowing plenty of clearance for stripping.



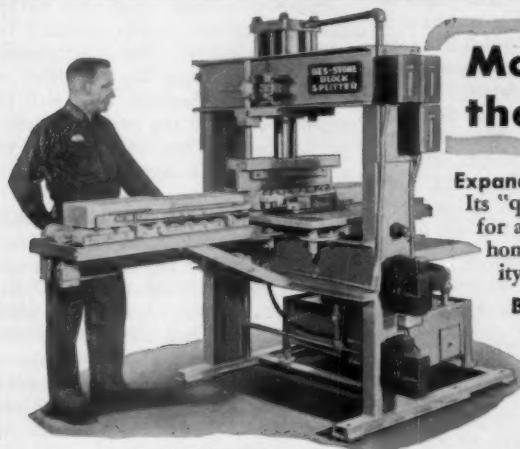
TRUCK HANDLING RIG

This is a 15 ft. all-steel body capable of hauling three 500 gal. tanks and lids with a positive chain drive, carriage and safety locking device. One man can load or unload tanks on unlevel ground with ease and safety. We use a 12-volt, 4,000 lb. Budgit Hoist that operates off the truck battery. We will design a body to fit your truck.

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Front view showing operator feeding block into BES-STONE Block Splitter.

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Darex Diary

No. 9 of a series

by Henry L. Kennedy

Member, American Concrete Institute

Manager, Construction Products

Deweys & Almy Chemical Company



"The fifth ingredient in concrete"
"Communications in today's ready mix plants"
"DARAONE successfully protects masonry walls at Monticello"

TODAY, with its advantages universally known, air entrainment in concrete has become the rule, rather than the exception. Accordingly, DAREX AEA has truly earned the right to be considered "the fifth ingredient in concrete," a term that we coined for this air entraining agent some years ago.

As the "fifth ingredient," DAREX AEA is entitled to the same care in proportioning as the cement, aggregates and water. It is important that the quantity introduced into the concrete-making operation should be measured by some dependable and accurate method. Secondly, the mixed concrete should be tested to insure that the optimum volume of air is present. For too little air means that the full advantages of air entrainment cannot be realized; while too much air can have undesirable effects on the strength properties of the concrete. In short, determination of actual air content has attained the status of a full-time control test, along with such other tests as consistency, compressive strength, unit weight, etc.

Wide and growing interest has sprung up in connection with this measuring and testing equipment. Consequently, at the National Ready Mixed Concrete Association convention in Chicago, February 13-16, Dewey and Almy will exhibit an operating display of DAREX AEA dispensers as well as several popular air measuring devices.

We'd be delighted to have you stop by, see the exhibit (Booths 101, 102), and talk concrete. Our own technical staff will be present to answer your questions, as will several of our distributors from all parts of the country.

The efficiency of intra-company communications can be a deciding factor in the ability of any business to serve its customers well. Many of

today's ready-mix plants provide excellent examples of smoothly-functioning communications operations.

Orders are received by telephone at a control center. They are relayed immediately to the batch operator by squawk box or teletype. Contact is maintained with truck units and field personnel through two-way radio units, in order to facilitate dispatching and improve routing efficiency.

In one instance, a large producer installed a TV camera and receiver. The camera picks up the ready mix trucks as they enter the yard, and the picture appears on a receiver screen conveniently located in front of the batcher. Thus, with the teletype order for concrete already received through central communication, the batcher is able to crank out six cubic yards of custom-ordered concrete and have it ready for the truck to which it is consigned by the time the truck enters the plant. The driver is advised by radio of his destination — given the help needed as to the most efficient route, where to avoid heavy traffic, detours, etc. Consequently, the truck unit stops only long enough to load and away it goes. Its next trip will probably be charted before the driver starts back.

* * * *

Over two years ago, Daracone, our silicone base water repellent, was applied to the exterior masonry walls of the Thomas Jefferson home at Monticello, Virginia. Recently, we learned that the architect, Milton L. Grigg, F.A.I.A., of Charlottesville, Virginia, is very happy with the performance of Daracone on this famous old building and has, as a result, been specifying Daracone in other work of his own and also recommending it to other architects. Daracone was originally recommended by Stone and Webster Engineering Corporation.



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pearing on the balance sheet. This is especially true in a manufacturing organization.

In most cases inventory is valued at either cost or market, whichever is lower. Let us take the following example and observe how this process of valuation works. First, let us define terms. Cost is what you paid for the article, market value is what you would pay for the same article if you purchased it on the balance sheet date.

	Cost	Market	Inventory Valuation
Item 1	\$100	\$100	\$100
Item 2	90	110	90
Item 3	75	50	50
Totals	\$265	\$260	\$240

Item 1: The cost and the market are the same. Consequently the inventory valuation is the same, i.e., \$100.

Item 2: The cost is \$90 and the market value is \$110. Since the cost is lower than market, the inventory valuation is \$90.

Item 3: The cost is \$75 and the market value is \$50; since the market value is lower than the cost, the inventory valuation is \$50. The total inventory valuation will be \$240.

Another account in the current asset section of the balance sheet is the prepaid expenses entry. This account is usually composed of unexpired insurance premiums applicable to future accounting periods, prepaid interest, prepaid rent, and sundry other items. These items are classified as current assets because they will be expense items in the next accounting period and will not cause a drain on cash, since they have already been paid.

Fixed assets are assets that are used in conducting and operating the business. They differ from current assets in that current assets will be either sold or converted into cash, while fixed assets are not intended for sale.

The fixed asset group consists of such items as land, buildings, equipment, fixtures and automobiles. These assets are recorded on the books at cost.

Since fixed assets by definition have a useful life of more than one year, some method must be devised whereby a portion of the cost of the assets will be charged to the expense of operations each year. This is what accountants call depreciation. In other words, depreciation is a reasonable and rational manner of allocating the cost of fixed assets over their useful life.

The reserve for depreciation is the accumulation of the annual charges which have been charged off to expense. This reserve is deducted from

the cost of the fixed asset to arrive at the book value of the fixed asset. For example, assume an asset is purchased at a cost of \$1,000 and has a useful life of ten years. Depreciation on a straight line basis would be \$100 per year (\$1,000 divided by 10).

The first year the reserve would show a balance of \$100, the second year \$200, the third year \$300, and so on. After the third year the item would appear on the balance sheet as follows:

Cost	Reserve For Depreciation	Book Value
\$1,000	\$300	\$700

Current liabilities are liabilities that will be paid within one year from the balance sheet date. Accounts payable are liabilities that have been incurred for materials, supplies, or merchandise. Loans and notes payable are liabilities you owe to a bank for a loan or to others for loans or for purchase of merchandise.

Accrued expenses and taxes seem to cause some confusion. Accrued items are expenses that are properly allocated as an expense of the accounting period, but are not yet due and payable. For instance, real estate taxes for the current year are usually payable in the following year.

Finally, we come to the last section of the balance sheet, the capital section. This is usually composed of two items: capital, and earned surplus, which is sometimes called retained earnings.

Common stock represents the

original investment in the business enterprise. A good balance sheet will adequately describe the stock, such as par value, number of shares authorized and number of shares issued.

The term earned surplus, which is now often entered as retained earnings, causes a good deal of confusion. Many persons believe that surplus is the amount of excess cash in the business. Nothing could be further from the truth. Surplus is the accumulated earnings of the business not distributed in the form of dividends. Because a balance sheet shows a large surplus does not mean that the enterprise is in good financial condition, nor does it mean that there is cash available for dividends or for other purposes.

Frequently accountants are asked this question: If the business is so profitable and there is such a large surplus, where is the cash? Well, the profits are usually reinvested in the business in the form of additional working capital or expansion of plant, and/or the purchase of new and modern equipment.

The foregoing paragraphs concerning the balance sheet should enable a person with little or no accounting training to understand a simple balance sheet. The executive or owner of a business who is in doubt about any item on a balance sheet or financial statement should ask his accountant to explain the item, or, better still, to go over the financial statements and explain the significance of each item.

Construction —

(From page 26)

facility program. On the other hand, military and naval construction are expected to continue increasing for the second year, reaching about \$1.5 billion, a gain of 15 per cent. Conservation and development construction, which has been trending downward since 1950, is expected to increase by 13 per cent, to about \$675 million.

STATE AND LOCAL — As the dominant part of public construction, state and local public works, consisting principally of highways, schools and other community facilities, are expected to total more than 70 per cent of public expenditures in 1956, approaching \$10 billion.

Highway construction is expected to rise \$500 million this year to a total of \$4.6 billion, without consideration of any expanded program that might be approved by the Con-

gress, which would show its effect later.

The mounting pressures for new classrooms to accommodate rapidly increasing school enrollments and replace obsolete facilities should push public educational construction some 12 per cent ahead of 1955 activity to about \$2.8 billion, not taking into account any new federal aid legislation that may be enacted.

Sewerage and water facilities, based on bond issue approvals, are expected to continue rising at the rate of more than 10 per cent, to about \$1.2 billion, still far below requirements of growing communities and a swelling population.

Influences on Construction

Although construction activity has been dramatic in size in recent years, its volume has seemed more spectacular because its growth has been steady since the end of World War II, when compared with substantial

Darex

products at work



DARAONE stops mortar deterioration at historic Monticello

Consultants: Stone and Webster Engineering Corporation
Architect: Milton L. Griggs F.A.I.A.

The mortar between the bricks in the historic Thomas Jefferson home at Monticello, built in 1770, started to deteriorate a few years ago. This original mortar had been made with local ingredients . . . and it was found that an exact match of the mortar could not be made today.

In order to preserve the character of this historic building, DARAONE silicone-type water repellent was applied to all of the masonry a little more than two years ago. There has been no trace of further deterioration of the mortar since that time.

DARAONE is a balanced formula of a special silicone resin and solvent. Again and again it produces excellent results on applications where other water repellents have failed.

Write today for a copy of our prepared DARAONE specifications and helpful data about tests you can make to insure the lasting protection of masonry walls.

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fluctuations in the entire national economy as measured by gross national product. This uniform growth, when unhampered by regulation, thus has served as an effective stabilizer in the economy, as demonstrated particularly in 1954 when other major segments of economic activity were declining or leveling off.

Consisting of about 15 per cent of the gross national product at the present time, construction activity is beginning to occupy the position it had in the national economy during the middle 'twenties when it accounted for more than 15 per cent of the nation's production of goods and services. Considering this position as normal in prosperous times, total construction volume should attain a conservative estimate of \$75 billion annually within the next decade if economists' predictions of a \$500 billion economy materialize.

The steadily rising volume of private construction is the normal result of the demands of a rapidly growing population for housing and other facilities, and competition in business and industry to supply demands for a continually higher standard of living both through increased production and advancement in technology.

The tremendous backlog of public community facility needs results from successive postponements dating from 1929 — depression, a brief and partial recovery, a sharp recession, World War II, postwar reconversion, and years of mobilization for Korea and the cold war.



A guy who leaves
Guards off of gears,
Hasn't much
Between the ears!

LETTERS

Makes It Easier

Sir:

Your editorial (Don't Do It Yourself) in the December issue of CONCRETE is most interesting. Regardless of how you look at it, however, the "Do-it-Yourself" market for concrete blocks is big, and getting bigger.

One answer to the problem of unskilled masons is offered by interlocking blocks which do not require mortar. All that is necessary to make a strong, permanent, and attractive wall is to get the first course straight on the foundation, and then pile up the blocks. Reinforcing studs poured at 32-inch intervals in the garden wall, or 24-inch spacings in a building, furnish the structural stability.

We feel that the answer to the unskilled "Do-It-Yourself" trade is to supply something that does not take skill. Of course, we must admit that sometimes there are those who cannot even get the first course straight!

—R.A.F.

Eye Opener

We liked the editorial (Distress Over Prestress, CONCRETE, November 1955, page 7) you did on the prestressed concrete industry regarding the cost of getting into the business. It was an eye-opener to some of the concrete fabricators in this area. Thank you for your interest in our cause.

—P.L.

Koehring Promotion



R. E. Burton

R. E. Burton has been made assistant general sales manager of the Koehring Company. Mr. Burton has been associated with the company since 1948 and in 1952 became foreign representative to its subsidiary in

Tokyo, Japan. In addition to his duties as assistant sales manager, he will also direct the distributor sales education program both in Milwaukee and in the field.



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\$ales CLINIC

by Joseph N. Bell



Make 'Em Sit Up

Two sales managers of large companies recently conducted independent informal surveys among their own salesmen which wound up in an identical conclusion: that too many salesmen (many unknowingly) fall into the slack habit of greeting their prospects with queries that invite easy turndowns. About four out of five of the salesmen surveyed were opening their sales pitch with "How's business?", "How do things look?" or "Things picking up much yet?". These men were making sales *in spite* of their entre; most of them were leading with their chins, and playing right into the naturally defensive attitude of nearly all buyers when it comes to spending money.

What are the alternatives? The best is to develop an opening gambit provocative enough to make customers sit up, take notice and listen — in other words, a "this is what there is in it for you" message. For example, a business magazine salesman opens by greeting a customer with "Shake the hand of 5,215 purchasing agents" — the kind of prospects the customer is most interested in reaching with his ads (and the exact number on the subscription list of the magazine). A vending machine salesman unfolds a heavy piece of paper, 2- by 3-foot in size, spreads it out on the floor in front of the customer and says, "If I could show you how to make that space worth \$250 a year to you, you'd be interested, wouldn't you?"

Imaginative openers like these would work for your sales staff, too.

Startlin' Statistic

Here's a statistic that may startle you a bit in view of all the talk about the current building boom being the greatest this country has ever known. It's true that the 1,300,000 non-farm dwelling units started in 1955 is the largest ever, but this breaks down to 36 new residential units for each 1,000 non-farm families. Back in 1925, when there were 16½ million fewer non-farm families, 937,000

non-farm dwellings were started — which figures out as 47 new units for each 1,000 families. Along the same line, George Washington didn't *really* throw that dollar across the Rappahannock, and Davy Crockett was actually a terrific bore.

Mahomet Versus Mountain

An enlightened manufacturer of automobile seat covers is right now proving the axiom that "if the customer won't come to your store, you should take your store to him." The seat cover business is declining everywhere, but the Ero Manufacturing Company of Chicago is making spectacular gains through a promotion program worked out with Sears, Roebuck and Company. Ero gained permission to set up shop where potential customers would be showing up in huge numbers — on the parking lots of Sears stores throughout the country. In splashy looking trailers displaying their wares, Ero has been attracting new customers in unprecedented numbers. Sales, for example, have gone up 300 per cent in Atlanta, 350 per cent in Buffalo and 500 per cent in Milwaukee. Which proves there is always a margin for success when a little ingenuity is applied, and suggests that perhaps building materials dealers might also try exposing their products to people who might never wander down back streets to find them.

Same Old Menus, Though

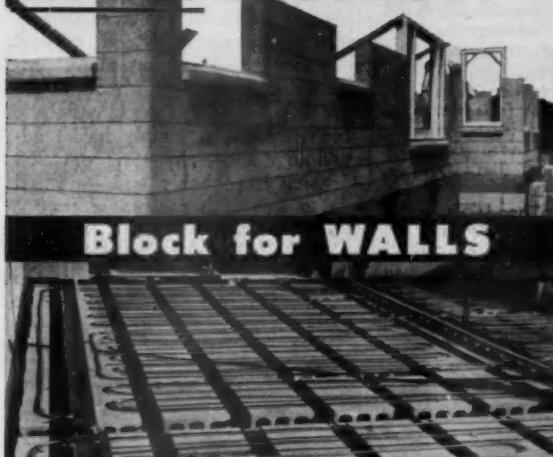
If you haven't, at some time or other, experienced that I-wish-I-knew-where-I'm-supposed-to-sit and who-are-all-these-people-around-me blues at convention luncheons, then you're the world's greatest extrovert and should skip this item. But for those of the unwashed who fumble their way around conventions, the Sheraton-Astor Hotel in New York City has come up with a slick method of counteracting all this confusion. The conventioneer is handed at the door a card and a mimeographed list. The

card contains a diagram of the speaker's table and the table to be occupied by the conventioneer. Each seat is numbered and the numbers correspond to names on the mimeographed list. Each table is also numbered, and when the visitor arrives at his table, he finds each place is numbered, too. So he not only has no trouble finding his seat, but he can also quickly identify everyone else at his table and the speaker's table. This doesn't eliminate luncheon bores or bad table manners, but at least, you know who the perpetrators are.

A Leaf from Plywood

It's often a good idea to take a look at how and what the opposition is doing, and in the case of plywood, they're doing some rather interesting things. This fall in Portland, Oregon, the Douglas Fir Plywood Association held a Golden Jubilee Exposition, supposedly marking the 50th anniversary of production of the first fir plywood in that city in 1905. The gimmick doesn't matter, but the purpose and results of the exposition do — mainly because this sort of imaginativeness could be used to very good advantage by the concrete industry. The plywood people had three unabashed motives in staging their show: (1) to draw national attention to plywood; (2) to stimulate designers and architects to develop new ideas and applications for plywood in the residential field; and (3) to build enthusiasm and promotional zeal among the plywood manufacturers themselves. The idea that really put the show across and accomplished the three objectives quite well indeed was the creation and exposition of "50 golden ideas" — in which architects everywhere were invited to submit new design ideas using plywood. They were given a completely free hand in design, without regard to convention, obsolete building codes or FHA requirements. One object was to stimulate the imagination of other designers. The association did not so much expect to see these 50 new ideas duplicated as to suggest entirely new treatments and approaches in the use of plywood. What they got was exciting and provocative enough to stimulate national press coverage and send manufacturers and designers alike home all fired up on plywood. Such a cooperative effort, imaginatively conceived and excitingly executed, is sorely needed to lift concrete masonry from the limbo of a rather prosaic local building material to an exciting medium of architectural expression.

Go After the Entire Market!

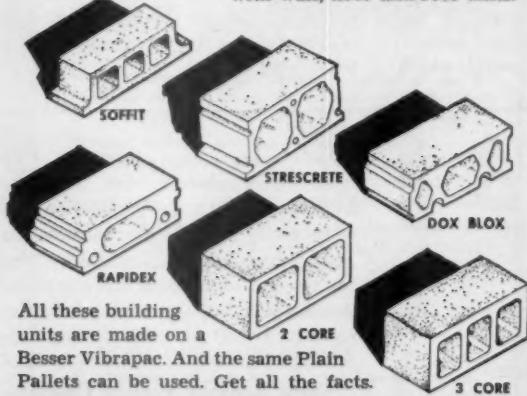


Block for FLOORS



Block for ROOFS

Fire-safe walls? Of course! But floors and roofs should be fire-safe, too. Walls are full of openings (windows, doors, etc.), while floors and roofs are relatively solid. Actually, TWICE the volume of block is required for floors and roofs than is required for walls. So why not go after this profitable market? Supply customers with wall, floor and roof units.



All these building units are made on a Besser Vibrapac. And the same Plain Pallets can be used. Get all the facts.

Write for Bulletin

BESSER COMPANY

ALPENA, MICHIGAN, U. S. A.
Complete Equipment for Concrete Block Plants

Demand the Best by Name



Patented Dur-O-wal Sets the Pace for Reinforcing Quality and Performance

Masonry industry leaders throughout the nation hail butt-weld Dur-O-wal for performance, quality and economy. Masons prefer Dur-O-wal because it lays flat . . . works fast . . . handles easily.

The masonry industry prefers Dur-O-wal because it safeguards the beauty of masonry by providing both vertical and horizontal reinforcing in all types of masonry walls.

6 Reasons why Dur-O-wal is STRONGER, FASTER AT LESS COST

- Mechanical Bond every 8 inches of wall
- High Tensile Steel (100,000 p. s. i.)
- shipped in convenient 10 foot lengths
- Double Mortar Lock at each weld
- Electric Butt Welds place all rods on a single plane
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Butt-Weld • Trussed Design

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GET ALL THE FACTS TODAY from the Dur-O-wal plant nearest you. Literature now available with new research data from independent tests. Request information today.



Dur-O-wal Div., Cedar Rapids Block Co., CEDAR RAPIDS, IA. Dur-O-wal Prod., Inc., Box 628, SYRACUSE, N.Y. Dur-O-wal of Ill., 119 N. River St., AURORA, ILL. Dur-O-wal Prod. of Ala., Inc., Box 5446, BIRMINGHAM, ALA. Dur-O-wal Prod., Inc., 4500 E. Lombard St., BALTIMORE, MD. Dur-O-wal Div., Frontier Mfg. Co., Box 49, PHOENIX, ARIZ. Dur-O-wal, Inc., 165 Utah St., TOLEDO, OHIO

Will Cement Be Short?

(From page 23)

ing materials. In comparison with prewar prices, cement is still by far the cheapest major construction material on the market. Prices are definitely going to go up in 1956 — and with some justification, in spite of the misleading 15.3 per cent net income for the cement industry last year, which reflected a completely unrealistic rate of depreciation.

Here are some comments on what you can expect in cement prices:

Engineering News-Record: "A number of companies have announced price boosts for the first quarter of 1956, ranging from 15 cents to 25 cents per barrel. This trend will continue."

Ellery Sedgwick Jr., president, Medusa Portland Cement Company: "Medusa will increase prices 5 to 6 per cent in certain plants in 1956. These price boosts were absolutely necessary because of recent cost increases."

Joseph S. Young, Portland Cement Company: "The cement industry is confronted with formidable increases in manufacturing costs next year. Labor rates should and will be jacked up; the cost of coal and other fuels is rising; the price of grinding media, lubricants and repair parts will be considerably higher than a year ago. In short, practically everything we purchase to make cement will cost us substantially more money."

But even while a cement shortage still exists and it appears that cement prices are on the rise, there are still a number of constructive steps that cement users can take to offset these problems. From extensive queries of ready-mix and block producers, CON-

CRETE finds that the five steps below are in most general use and are producing the most constructive results:

1. Purchase of cement from as many suppliers as possible. It has become poor strategy to deal with just one supplier.
2. Estimating and notifying suppliers of cement requirements as far in advance as possible. Producers who were hurt the least last year were those who notified suppliers in January of anticipated requirements for the whole coming year.
3. Keeping a lid on the opening of new accounts to be sure that you'll be able to supply old customers.
4. Use of judicious amounts of fly ash under carefully controlled engineering supervision to stretch available supplies of cement.
5. Installing additional cement storage facilities as a hedge against shortages.

To summarize, then, here are the conclusions CONCRETE draws from the foregoing evidence (bulwarked by study of a great deal of other fact and opinion not reproduced here):

1. Things will be better but still pretty tough in many localities (New York, New England, parts of the midwest) in 1956. Area's hardest hit will be those in which a toll road is being constructed or other government construction is siphoning off an abnormal amount of cement. (For breakdown of new capacity by areas, see Table III.)

2. Ready mix and products producers should be clearly out of the woods as far as cement problems are concerned by 1957, unless . . .

3. . . . the president's \$10 billion highway expansion program is approved. This will require an additional 60 million barrels of cement, which

may once again apply the squeeze on some smaller cement customers.

4. It is doubtful if the industry will expand much beyond present plans, since such additional expansion might dangerously extend cement production to meet what many producers still consider an abnormal demand.

5. Therefore, if supply hasn't adjusted to demand by 1957 or 1958 — which it probably will — you'll have to live with spasmodic cement shortages until public spending is reduced.

Looking far into the future, the Bureau of Mines predicts that the cement industry will have to expand 15 per cent by the end of 1956 and 40 per cent by 1959 to meet rising demand. In line with this, Joseph S. Young of Lehigh said recently, "It would not be unreasonable to predict an increase in cement consumption of 50 million barrels annually by 1970."

"But," continues Mr. Young cheerfully, "if all capacity projected for 1956 is completed on schedule, cement in most areas should no longer be in short supply by 1957. Moreover, although it is well nigh impossible to outguess the exact amounts of additional cement which may be required if and when a national highway bill is enacted, it would appear that—if the program is stretched out over a 10 to 12-year period — the future progressive increases in productive capacity now being contemplated should provide whatever additional quantities of cement may be needed."

In other words, if we can stagger through 1956, we should find smooth sailing from there on — no matter what happens.

Prestressed Institute to Meet at Hollywood, Florida

The Prestressed Concrete Institute has announced that its second annual convention will be held at the Hollywood Beach Hotel, Hollywood, Florida, May 16 to 18. Dr. Alan M. Ozell of the University of Florida Engineering Department, who is supervising a PCI-sponsored research and testing program, will serve as program chairman for the convention.

The Institute's founding convention at Fort Lauderdale about a year ago drew an attendance of well over 300 architects, engineers, contractors, and concrete products producers, and similar interest was shown in a three-day short course presented last fall.

These two previous experiences prompted selection of one of the nation's largest convention hotels to provide ample facilities for the 1956 convention.

Cement Makers Are In There Pitching

The mail bag continues to bulge these days with announcements regarding expanded cement manufacturing facilities. Some recent ones:

Arizona Portland Cement Company, Rillito, Arizona, has increased its daily capacity from 4,000 to 7,000 barrels with a third kiln.

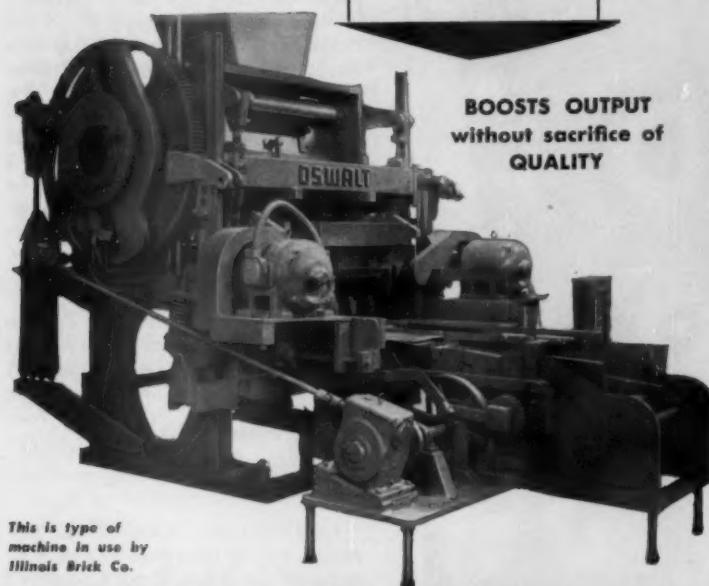
Calaveras Cement Company, San Andreas, California, has advanced by several months the completion date of its \$4,000,000 plant expansion program which originally was scheduled for the end of 1956. When completed it will raise the company's productive capacity by 30 per cent to more than 4,500,000 barrels of cement per year.

Giant Portland Cement Company, Harleyville, South Carolina, will add approximately 1,100,000 barrels a year to plant capacity by early 1957.

The Hawkeye-Marquette Cement Company plant at Des Moines, Iowa, will be expanded to produce an additional 500,000 barrels of cement annually by mid 1956.

Heavy Duty
No. 55 Model H

OSWALT
BLOCK
MACHINE



BOOSTS OUTPUT
without sacrifice of
QUALITY

This is type of
machine in use by
Illinois Brick Co.

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Includes exclusive
OSWALT Features:

- (1) Shock-Free Ejector and Front-End Pallet Feeder
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Ask for new OSWALT Brochure, just
published, showing complete details.

Pick INSTANTANEOUS HOT WATER HEATERS

NO FREEZING — NO QUICK SET

Ready mix plants throughout the country are installing Pick Instantaneous Water Heaters to meet the requirements of cold weather mixing. Here are the reasons:

- ★ No Waiting For Hot Water — Trucks haul more loads per day because Pick heats water instantly to temperature required and in volume needed.
- ★ Fuel Savings Are Substantial. Steam injection heating is the most efficient method known. There's no waste because water is heated only as used . . . never stored and allowed to cool.
- ★ No Storage Tanks Required. Compact design of Pick Heaters permits out-of-the-way installation in corners, on walls or overhead. Saves valuable floor space.
- ★ Thermostatic Control Insures proper water temperature (175° maximum) of mix to prevent quick set or freezing — and it's quiet.
- ★ Maintenance Cost Is Low. Pick Heaters can be cleaned in a matter of minutes — worn parts easily replaced.
- ★ Installation Is Inexpensive. Only ordinary pipe connections are required.

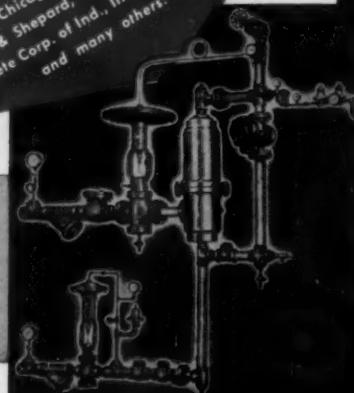
PICK
HOT WATER
HEATERS . . . Used by

- Calif. Portland Cement Co., California.
- Statler Ready Mixed Co., Kalamazoo, Mich.
- Thomas, Bennet & Hunter, Hagerstown, Md.
- Borzum Bros. Co., Akron, Ohio.
- Tennessee Concrete, Knoxville, Tennessee.
- Tonn & Blank, Inc., Michigan City, Indiana.
- T. L. Herben & Sons, Nashville, Tennessee.
- Edison Fuel & Material Co., Chicago, Ill.
- Elmhurst Chicago Stone Co., Elmhurst, Ill.
- Doles & Shepard, Chicago, Illinois.
- Concrete Corp. of Ind., Indianapolis, Ind.
- and many others.



SAVES MONEY FOR ANY
INDUSTRY THAT USES
HOT WATER

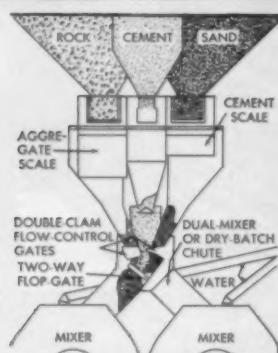
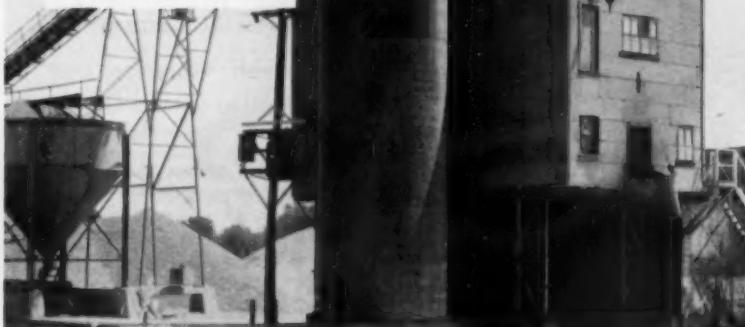
WRITE DEPT. CM-156



Write for booklet on how PICK HEATERS cut costs of Hot Water — No Obligation.

PICK MANUFACTURING CO. • WEST BEND, WIS.

Take a
"1-minute
tour"
through this
JOHNSON
concrete plant



**CENTRAL CEMENT FEED
with Concentric Batcher**

- Prevents "gumming", reduces dusting, pre-shrinks materials.
- handles 2 to 8 aggregates, arranged concentrically around 1 or 4 types cement.
- weighs cement on separate scale, aggregates on accumulative dial scale or individual beam scales.
- dual discharge available.
- 2 to 8 cu. yd. sizes, fully automatic air-ram operated, semi-automatic, or manual control.

Trace the flow of aggregates and cement through this Johnson central-mix plant. You'll find it an interesting "tour": Vertical bucket elevator feeds cement from silo to overhead bin at the rate of 275 bbls. per hour. The 1032-bbl. storage silo assures an ample supply of bulk cement on hand for uninterrupted production. Inclined conveyor feeds aggregates from stockpile to bin. Johnson All-Welded Portable-Section Bin provides 200 cu. yds. of overhead storage of aggregate and cement for immediate plant use. Bin is divided into 4 equal aggregate compartments, and a 260-bbl. central cement tank. 3 cu. yd. Concentric Batcher (see diagram) accurately weigh-batches all materials at top speed, and discharges into Koehring 3-yd. Mixer. Water weigh-batcher gives close quality control of mixed concrete. There's a size and type of Johnson plant that will fit your exact needs, too. Ask your Johnson distributor about it.

C. S. JOHNSON CO., Champaign, Ill.
(Koehring Subsidiary) TSBW-CONC.

JOHNSON CONCRETE PLANTS

BINS • BATCHERS • HOPPERS • ELEVATORS • SILOS • BUCKETS

NEW LITERATURE

QUICK OPENING DOORS—An 8-page bulletin describes Struthers Wells quick opening doors which are recommended by the manufacturer for concrete block curing vessels, ovens and creosoting cylinders. Automatic or semi-automatic in operation, these units are available in Ring-Lok and Wedg-Lok types. A copy of Bulletin SW-553 may be obtained by writing Special Equipment Division, *Struthers Wells Corporation*, Titusville, Pennsylvania.

PANEL FORMS—A 10-page bulletin describes All-Ply panel forms for simplified, fast concrete forming. A copy may be obtained by writing *Superior Concrete Accessories, Inc.*, 4110 Wrightwood Avenue, Chicago 39, Illinois.

COST RECORD BOOK—Truck operators will be interested in obtaining copies of the White Motor Company's revised "Cost Record Book". The



book provides a comprehensive yet simple system of analyzing truck operating costs and can be tailored to any truck-using business and any size fleet. A copy may be obtained by writing *The White Motor Company*, 842 East 79th Street, Cleveland 1, Ohio.

SYNCLINAL FILTERS—Catalog 107 describes the Marvel synclinal filters for hydraulic oils, coolants, and lubricants. A copy may be obtained by writing *Marvel Engineering Company*, 7227 North Hamlin, Chicago 45, Illinois.

PRECAST ROOF—A folder entitled "Flexicore Precast Roofs for Service Stations" outlines the construction method for low-cost concrete roofs for service station builders. It illustrates typical installations and roof slab layouts. A copy may be obtained

by writing *The Flexicore Company, Inc.*, 1932 East Monument Avenue, Dayton 1, Ohio.

CHAINS AND DRIVE WHEELS — Dura-Tred chains and Beaumont drive wheels for bucket elevators and conveyors are described in a new Beaumont Birch catalog. A copy of Catalog DC-855 can be obtained by writing *Beaumont Birch Company*, 1505 Race Street, Philadelphia 2, Pennsylvania.

SILICONE PRODUCTS — The 1956 reference guide to Dow Corning silicone products describes almost 150 of the most generally used silicone products. The products are grouped by physical form and cross-indexed by usage enabling them to be located by what they do as well as by what they are. Product descriptions are condensed, fact-packed, and devoted to essential data. A copy may be obtained by writing *Dow Corning Corporation*, Midland, Michigan.

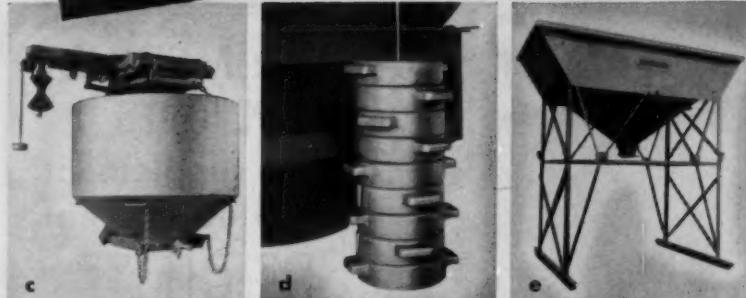
POZZOLITH — A 20-page illustrated booklet entitled "Water and Sewage Works" contains owners' reports on the present day condition of concrete produced with Pozzolith, in structures ranging in age from 14 to 19 years. A copy may be obtained by writing *The Master Builders Company*, Cleveland 3, Ohio.

ANCHORING AND DRILLING DEVICES — A new pocket size catalog illustrates, describes and lists the sizes and prices of Star anchoring and drilling devices for masonry and hollow walls. For a copy of catalog No. 5504 write *Star Expansion Bolt Company, Inc.*, 142 Liberty Street, New York 6, New York.

PRESSURE PIPE — Instructions for laying Price concrete pressure pipe are contained in a new 16-page booklet. Primarily described is the backhoe method which was found to be the most practical way to lay Price pipe. A copy may be obtained by writing Pressure Pipe Division, *Price Brothers Company*, Dayton 1, Ohio.

KILN CLOSURE EQUIPMENT — A new brochure shows typical installations and gives construction details on Universal curing room doors. A copy may be obtained by writing *Universal Door Carrier, Inc.*, 1117 Cornell Avenue, Indianapolis 2, Indiana.

ideas
for low-cost
handling of
aggregates
and cement



Water Batchers
give close quality control of concrete. Semi- or full-automatic. 120 and 240-gal. capacities.

Cement Batchers
6 sizes from 10 to 38 cu. ft. Scale capacities from 700 to 3000 lbs. Semi- or full-automatic controls.



Batcher Test Weights
available in sets of nine 50-lb. calibrated units, and two 25-lb. steel hangers. Assure accurate weigh-batching.

Yard Bin
is ideal for loading trucks where no batcher is required. 9-ft. clearance under discharge gate. Holds 35 cu. yds.



Clamshell Buckets
all-welded, smooth inside and out. Fast-filling, easy closing. Manganese cutting edge. 3 types, 10 sizes, $\frac{3}{8}$ to 3 yds.

Concrete Buckets
3 types: Finger-Tip Control in $\frac{1}{2}$ to 2 cu. yd. sizes; 1 to 4 cu. yd. Johnson-Dravo; and 2 to 8-yd. Lo-Slump buckets.

Little Titan Scale
accurately weighs loaded barrows. Has one, two or three 500-lb. weigh-beams. Light — 2 men can carry.

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MANUFACTURERS' NOTES

New Prime-Mover Plant

Prime-Mover Company, Muscatine, Iowa, recently announced the construction of a new factory building which will be ready for occupancy in May. The company manufactures the Prime-Mover powered wheelbarrow.

New External House Organ

The Lith-I-Bar Company, Holland,

Michigan, is now publishing an external house organ, the Lith-I-Bulletin. Although it is primarily designed for Lith-I-Block producers, anyone desiring to receive a monthly copy can do so by notifying the Lith-I-Bar Company, Holland, Michigan.

Hough Distributors

The Frank G. Hough Company, Libertyville, Illinois, recently announced the appointment of new

distributors and the assignment of additional territory to some of their present distributors. These companies, which are authorized and equipped to handle the sales, service and parts business on the complete lines of Payloader tractor-shovels and tractors, are: Philippi Equipment Company, Minneapolis, Minnesota; Rish Equipment Company, Cleveland, Ohio; J. D. Evans Equipment Company, Sioux Falls, South Dakota; Brandeis Machinery & Supply Corporation, Mt. Vernon, Illinois; State Equipment Company, Montpelier, Vermont, and Orton Equipment Company, Stratford, California.

Worthington Promotions

John B. Laramy has been appointed assistant general sales manager of the Worthington Corporation,



J. B. Laramy



A. F. Welsh

according to a recent announcement by Thomas J. Kehane, vice president in charge of sales. At the same time, Alvin F. Welsh was appointed manager of the marketing research department.

District Sales Manager



H. Meyer

The new Milwaukee sales office of Universal Atlas Cement Company, which opened on January 1, will be headed by Harold Meyer, the newly appointed district sales manager. Mr. Meyer joined the company in 1943 as a salesman in Wisconsin and has since become well-known in concrete construction circles in that state.

Jaeger Promotions

J. D. Anderson has been promoted to general sales manager of the Jaeger Machine Company, Columbus, Ohio, succeeding J. H. Yearling who assumes the new position of director of market promotion. Mr. Yearling

IDEAL FOR SMALL OR MEDIUM PLANTS or to supplement large equipment

KENT SUPER BLOCKMAKER



A push button starts the cycle during which operations occur automatically in sequence.

★

Equal delivery of aggregate to the mold box is effected by agitation and mold box vibration assures uniform block density.

★

A SPECIAL air cylinder-powered press head speeds the cycle and assures blocks of uniform height.

★

Consistently produces blocks at a rate of 5 or more per minute from any aggregate.

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Priced below any machine of comparable performance.

★

Write today for complete information and learn how easily you can improve your situation with the addition of this unusually simple, compact and efficient machine.

The KENT MACHINE COMPANY
CUYAHOGA FALLS, OHIO
CONCRETE PRODUCTS MACHINERY SINCE 1925

Canadian Distributor: Wettlaufer Equipment, Ltd., 49 Merton St., Toronto 12, Ontario



BIN STUCK LATELY?

There are two ways to handle a stuck bin. You can bang it loose with a sledge hammer, and damage your equipment; or you can install Cleveland Vibrators and put an end to your problem. The first way is slow and costly. But the second way is efficient, fast, and inexpensive.



How about you? Are your schedules suffering from stuck bins? The low cost of Cleveland Vibrators will surprise you, and the results will definitely please you. Why not get the whole story with a two-cent post card.

Air or Electric
Portable or Permanent
Silent or Standard

Bin Stuck Lately?

THE
CLEVELAND
VIBRATOR
COMPANY

2708 Clinton Ave. • Cleveland 13, Ohio

CONCRETE—February, 1956

has been associated with the company for 28 years, serving as sales manager since 1949. Mr. Anderson has been with the company 21 years and was a divisional sales manager prior to his recent promotion.

Wyandotte Appointment



L. W. Munchmeyer

Bert Cremers, vice president and general manager of the Michigan Alkali Division, Wyandotte Chemicals Corporation, has announced the appointment of Louis W. Munchmeyer as assistant general manager of the division. In his new position, Mr. Munchmeyer's principal responsibilities will be in production.

Worthington Promotion



W. A. Finn

Worthington Corporation's Holyoke Works and Sales Operations have been combined as the Holyoke Division, according to a recent announcement by Walther H. Feldmann, executive vice president. At the same time, it was announced that William A. Finn has been appointed general manager of the division commencing December 1, 1955. Mr. Finn has served in various capacities at Worthington and most recently was assistant general sales manager of European operations.

W. S. Speed Succumbs

William S. Speed, prominent figure in the cement industry, died December 8. Mr. Speed became president of the Louisville Cement Company in 1912. He relinquished that office in 1939 to become chairman of the board, the position he occupied at the time of his death.

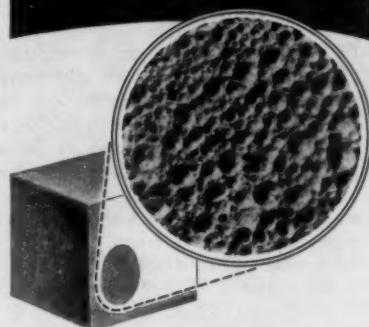
P. G. Hahn Retires

Lehigh Portland Cement Company, Chicago, Illinois, has announced the retirement of P. G. Hahn, district sales manager at Spokane, effective January 1, 1956. Mr. L. R. Snider has succeeded Mr. Hahn as district sales manager.

Introducing

Elastizell

... a basis for making
LIGHT WEIGHT, STRONG,
INSULATING concretes
from universally
available materials



what can YOU do
with this product
of many uses?

ELASTIZELL-TYPE CONCRETE "PLUSSES" ...

- LIGHT WEIGHT ...
big savings in handling and design
- STRONG ...
strengths for structural applications
- MOISTURE-RESISTANT ...
cork tile on grade
- SELF-INSULATING ...
comfort on grade
- POSITIVE DENSITY CONTROL ...
results as predetermined
- HOMOGENEOUS STRUCTURE ...
uniform strength and insulation



Write, wire
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EQUIPMENT & MATERIALS

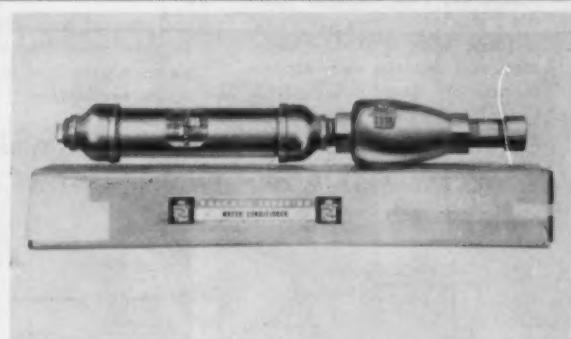


Water Conditioner

THIS new Packard water conditioner is said to eliminate and prevent scale and corrosion formations in boilers and water systems without the use of chemicals. According to the manufacturer, the conditioner imparts added energy to the atoms of the water solution thus preventing scale and corrosion. The unit is manufactured in sizes handling from 6.5 to 1760 gallons per minute for connection with corresponding standard iron pipe sizes ranging from $\frac{3}{4}$ of an inch to 12 inches. Larger sizes are available. For additional information write *Packard Water Conditioner Division, Inc.*, 2220 West Beaver Street, Jacksonville 9, Florida.

Lightweight Concrete

A NEW liquid foaming agent called Elastizell permits the manufacture of a lightweight concrete that is said to be strong, self-insulating, highly moisture resistant, and adaptable to many uses. According to the manufacturer the process makes it possible to control densities from 40 to 150 pounds per cubic foot, and strengths from 600 to 3,000 psi for floor fills and from 300 to 600 psi for roof fills. The chemical, which incorporates a foaming agent and a water-soluble plastic agent, is mixed with wet concrete in a special mixer. For additional information write *Elastizell Corporation of America*, 15555 W. McNichols Road, Detroit 35, Michigan.



Alloy Powders

POWDERS of the nickel-chromium-boron alloys, Colmonoy No's 4, 5 and 6, have as much as 10 per cent improvement in deposit efficiency. Colmonoy No. 4 produces Rockwell hardness of 35-40 on the C scale. Its specific gravity is 8.22, its melting point 2025 degrees F. Colmonoy No. 5 produces Rockwell hardness of 45-50 on the C scale. Its specific gravity is 8.14, its melting point 1950 degrees F. Colmonoy No. 6 produces Rockwell hardness of 56-61 on the C scale. Its specific gravity is 7.80, its melting point 1900 degrees F. All are said to have excellent abrasion, corrosion and galling resistance, excellent red hardness and weldability, and good impact resistance. A Spraywelder pistol assembly is used to apply the powder. For additional information write *Wall Colmonoy Corporation*, 19345 John R. Street, Detroit 3, Michigan.



Truck Mixer

THE newest addition to the Challenge line of Pacesetter truck mixers is this $4\frac{1}{2}$ -cubic yard model. Features of the unit include a newly designed 36-inch "Thoro-Mix" mixing blade; $3/16$ -inch drum; and a meter that gives proper drum speeds for charging, mixing and discharging, and which also records the total number of revolutions during the life of the mixer. With the introduction of this unit, the Challenge line of truck mixers now includes a total of nine standard sizes: 3-, $3\frac{1}{2}$ -, 4-, $4\frac{1}{2}$ -, 5-, $5\frac{1}{2}$ -, 6-, $6\frac{1}{2}$ -, and 8-cubic yard capacities. For additional information write *Cook Bros. Equipment Company*, 3334 San Fernando Road, Los Angeles, California.





Dealers Increase Business with Symons Form Rentals

Because concrete forming is one of the first construction steps, many Ready-Mix and Building Material Dealers are renting Symons Forms to local contractors. Contractors find that these strong, easy to erect forms save them considerable labor and time, and insure safety no matter how fast the mix is poured.

Symons Form Rental bring the Dealer — new ready-mix customers, added rental profits, repeat sales of hardware and ties, additional lumber and plywood sales, increased building material sales and customer satisfaction.

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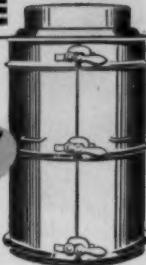
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Dodson's Digest



Ben Donovan discovers the secret of making stronger concrete pipe

Dropped in on a concrete-products company the other day — one that had just opened for business.

The owner, Ben Donovan, was very friendly — and so eager to show off his new plant that he didn't even bother to find out what company I was with!

" . . . and this is where we cure the concrete pipe," Ben was saying as we walked out to the storage yard after a tour of the plant. "Got an order for a mile of sewer!"

When I saw the pipe, I was shocked. "Aren't the concrete surfaces awfully rough, Ben?" I asked with concern. "And look — the ends are chipped, and there are cracks in some of the pipe sections. Perhaps you should use . . ."

Ben's face flushed as he interrupted. "We're not entering them in a beauty contest, Dodson. They're going to be buried — put underground. If you don't like the way I make pipe, you can . . ."

"Wait, Ben, let me finish," I broke in. "The appearance of the pipe, and the trouble your men are having taking them out of the forms — not to mention that pile of rejects over there — tell me you're having production trouble — lots of it. I was about to suggest that you use Calcium Chloride in your mix!"

"I've enough expense as it is, Dodson," Ben said gloomily. "I can't afford higher production costs."

"Calcium Chloride added to your mix will save you money, Ben!" I exclaimed. "It flows better into the forms, gives high early strength! You'll have faster, more uniform curing. You'll have a tougher product, that can be handled without danger of chipping or breaking. You'll step up production — and have better looking pipe. In addition . . ."

"In addition," Ben said, grinning now, "do you happen to know the best brand of Calcium Chloride to use — and where I can get fast delivery?"

"They say Wyandotte is your best bet," I said, smiling, as I handed him my business card.

— L. D. DODSON

P.S. — You'll find details on the correct use of Wyandotte Calcium Chloride in our folder, "How to make better concrete products and ready-mix." For a free copy, just drop me a line. Wyandotte Chemicals Corporation, Wyandotte, Mich. Offices in principal cities.

Wyandotte
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HEADQUARTERS FOR CALCIUM CHLORIDE

EQUIPMENT & MATERIALS

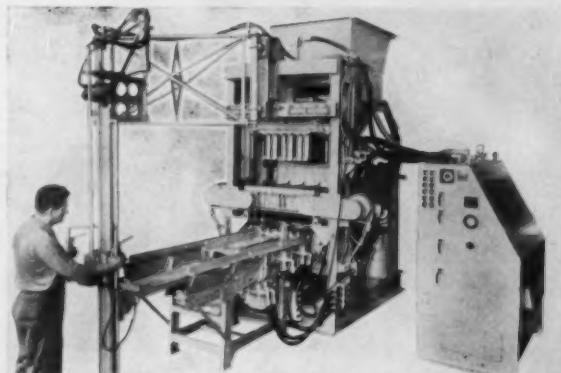


Two-Way Radio Unit

IMPROVED fringe area reception is featured by Motorola's new line of Twin-V radiophones. A new acoustically designed speaker improves communications while a new anti-clamp squelch circuit blocks the receiver when only noise is present, but clears the receiver for communications whenever a modulated carrier, even a weak one, is present. The new line includes newly developed 6/12 volt DC dynamotor powered models, as well as the all-vibrator versions. For additional information write Technical Information Center, *Motorola Communications & Electronics, Inc.*, 4501 West Augusta Boulevard, Chicago 51, Illinois.

Concrete Block Machine

THE new fully-automatic Blockmaster "3" concrete block machine is designed to produce up to approximately 900 block per hour. It handles all aggregates and makes all types and sizes of 4-, 6- and 8-inch high block. Automatic controls, located in a separate dust-proof cabinet, assure uniform accuracy and permit fast, safe, one-man operation. Once controls are set for a desired cycle, the operator can control the machine from his normal position at the off-bearer. Hydraulically powered for smooth positive performance at low pressures, this machine is said to have fewer operating parts than any other block machine available today. For additional information write *Multipack, Incorporated*, 7402 Grand Division Avenue, Cleveland 25, Ohio.



Tractor Shovel

THIS Michigan Model 75A tractor shovel has a 1-cubic yard capacity and weighs 12,750 pounds. It has as standard equipment four-wheel hydraulic brakes, previously available only on larger machines in the line. With four-wheel drive and rear wheel steering, it is offered with either a 77-hp. gasoline engine or an 80-hp. diesel engine. Its 12-volt electrical system facilitates quick starting in cold weather. The Model 75A has four speeds forward and reverse, with a maximum speed of 26 miles per hour in either direction. For additional information write *Construction Machinery Division, Clark Equipment Company*, Benton Harbor, Michigan.

Straddle Carrier

PICTURED here is a new straddle carrier with load hooks which pivot inward to permit carrying without bolsters. The new carrier has four forks, two on each side, which swing in at right angles and meet in the center to form two arms under the load. It has a capacity of 20,000 pounds; road speed up to 40 miles per hour; four wheel steering and a four-speed synchromesh transmission. The carrier is available in six models capable of carrying loads ranging in height from 48 to 66 inches and in width from 40 to 52 inches. Additional information may be obtained by writing *Ross Carrier Division, Clark Equipment Company*, Benton Harbor, Michigan.



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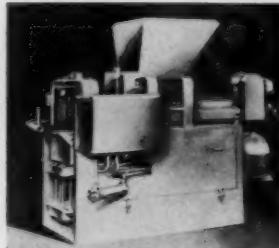
Because the cores, instead of serving only to form the voids, are put to work as active densifying agents. Under direct-connected motor power, they move back and forth 3600 times a minute, with each stroke serving to pack incoming material LATERALLY against the mold box sides.

Lateral packing from around 300 square inches of packing area is augmented by the upward pressure, with the amount of squeeze adjusted to fit the kind of aggregate being used.

1-man operation . . . hydraulic movement . . . electrical controls. 2 1/4 tons of machine self-contained to occupy only 33 square feet of floor space.



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Edmont Case No. 475: Handling finished concrete products, plastic treated gloves lasted for 2 shifts. Edmont No. 31's with triple-thick palm coating, wore up to 8 shifts, cut costs more than 50%.

Job-fitted gloves cut costs over 50%



No. 31
triple-coated
palm

The actual wear report given above is typical of the experience thousands of users have had with Edmont "job-fitted" gloves. In this case, Edmont No. 31's were recommended for the job because their triple-thick plastic coated palms outwear any other gloves made for handling rough concrete and cinder blocks. These gloves also give a better grip to prevent accidents and breakage.

Free Test Offer To Listed Firms:
Tell us your operation and materials handled. Without cost, we will send you recommended gloves for on-the-job testing.

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Edmont
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GLOVES

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All of the following books are available from Concrete Publishing Corp., 400 West Madison Street, Chicago 6, Ill. Prices are for cash with order and include postage.

Good Books for Concrete Men

MANUFACTURE OF CONCRETE MASONRY UNITS. By William Grant. Published 1952. 184 pages, 19 chapters, 20 charts, 18 tables. Complete operating manual of up-to-the-minute practice showing how to produce top quality concrete block at the lowest possible cost. Rated by block producers everywhere as the best book on the subject ever published. **PRICE \$4.00**

CONCRETE PRODUCTS AND CAST STONE. By H. L. Childe. 272 pages, 252 illustrations. Revised 1949. Details the manufacture of precast concrete, concrete products and cast stone. Full information on foamed slag, wood-wool, consolidation by vibration and other manufacturing processes and materials. **PRICE \$3.15**

MOULDS FOR CAST STONE AND PRECAST CONCRETE. By F. Burren and G. R. Gregory. 96 pages. Information on wood and plaster mold making so prepared that a novice without previous experience can make good, inexpensive molds. Large, easy-to-follow drawings with concise explanatory instructions are based on actual molds used by experienced mold makers. **PRICE \$1.60**

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DESIGN AND CONSTRUCTION OF FORMWORK FOR CONCRETE STRUCTURES. By A. E. Wynn. Revised 1951. 312 pages, 229 illustrations, 9 folders, 11 design tables. Complete designs for formwork for every type of plain and reinforced concrete structure, from simple footings to arch bridges, with tables from which the sizes and quantities of timber required for any type or size of structure can be seen at a glance. **PRICE \$6.15**

FORMS AND CENTERING. By A. B. MacMillan, chief engineer, Aberthaw Construction Co. 158 pages, cloth binding. Gives general requirements of form construction, construction principles and answers contractors' form problems by means of detailed drawings and descriptions of forms for dams, retaining walls, circular bins, tanks, culverts, sewers, buildings, bridges, roads and miscellaneous structures. **PRICE \$2.00**



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ELEMENTARY GUIDE TO REINFORCED CONCRETE. By Albert Lakeman. Revised 1950. 88 pages, 79 illustrations. Clarifies principles governing design of reinforced concrete for the reader who has no previous knowledge of the subject. Simple explanations are illustrated with clearly drawn diagrams that make the text readily understandable for the beginner. **PRICE \$1.60**

REINFORCED CONCRETE DESIGNER'S HANDBOOK. By Chas. E. Reynolds. Revised 1951. 344 pages, 69 tables, 40 illustrations, 106 examples. A standard work of design data for everyday use. Has large, easily read design tables that cover every type of

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PRESTRESSED CONCRETE. By Kurt Billig. Published 1953. 470 pages, 119 graphs, tables and drawings, 31 illustrations. The first of three parts deals with general data and fundamentals, the second with the design of prestressed structures, the third with design problems and a number of numerical examples. Each chapter is followed by an extensive bibliography. Included is Dr. Billig's proposed Code of Practice for prestressed concrete. **PRICE \$9.00**

PRESTRESSED CONCRETE STRUCTURES. By August E. Komendant. Published 1952. 261 pages, 124 graphs, drawings and tables, 34 illustrations. A comprehensive discussion of prestressed concrete in a brief and simple form for the use of men in the field as well as those engaged in research. Covers general considerations; physical properties of materials; changes of forces and stresses due to plastic flow and shrinkage; and representative prestressed structures. **PRICE \$6.00**

PRESTRESSED CONCRETE. By Gustave Magnel. Revised 1954. 345 pages, 328 illustrations. Contains both the theories of prestressing and examples of its use. Chapter subjects include: the principle of prestressed concrete; methods of prestressing; statically determinate beams; continuous beams; tests; creep of steel and concrete; buckling during prestressing; effect on prestress of time and superimposed load; permissible stresses; applications of prestressed concrete; and prestressed precast concrete. **PRICE \$8.00**

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DESIGN OF PRESTRESSED CONCRETE STRUCTURES. By T. Y. Lin. New 1955. 456 pages, 242 illustrations. Comprehensive coverage of all phases of prestressed concrete structures, emphasizing American methods and conditions. Formulas, tables and graphical methods are so introduced that both preliminary and final designs can be made with ease. Costs of prestressing are also considered and prestressed lift slabs and pretensioning products are described. **PRICE \$11.50**

SIMPLIFIED MASONRY PLANNING AND BUILDING. By J. Ralph Dalzell. New 1955. 376 pages, 182 illustrations. Practical, step-by-step guidance for planning and building all common types of concrete, concrete block, stucco and similar masonry structures. Includes basic information on cement, concrete and mortar. **PRICE \$5.00**

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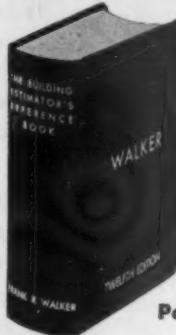


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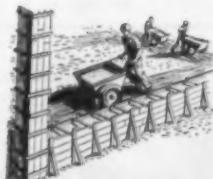
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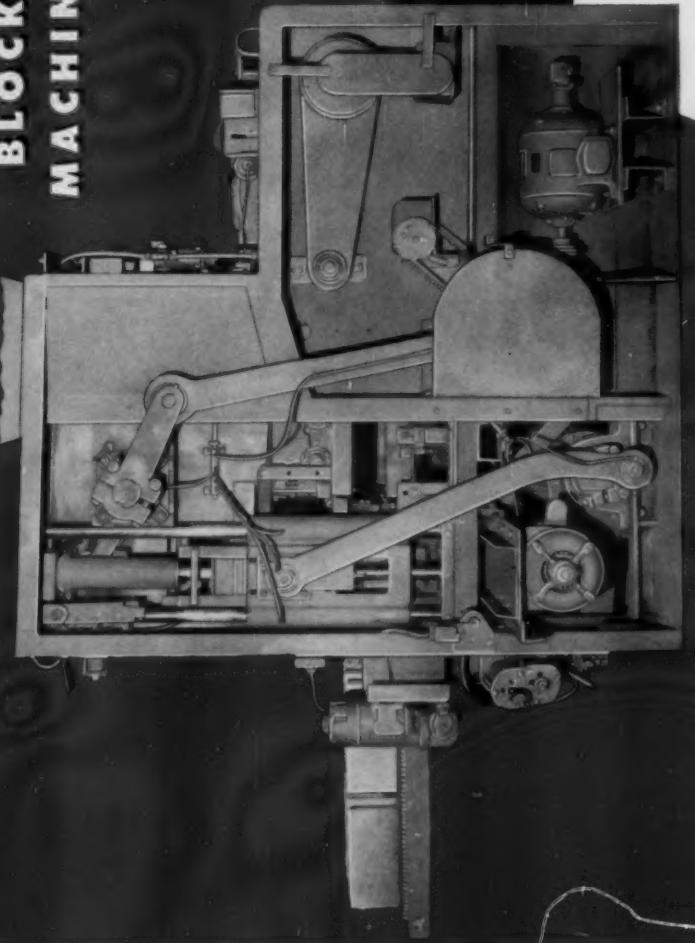
ADVERTISERS IN THIS ISSUE

Aurand Mfg. & Equipment Co.	59
Associated Industries, Inc.	61
Bergen Machine & Tool Co., Inc.	15
Berg Vault Company	61
Besser Company	6, 43, 49 & Back Cover
Chain Belt Company	Between 16 & 17
Classified Advertising	62-63
Cleveland Vibrator Company	55
Columbia Machine	8
Columbia-Southern Chemical Corp.	39
Concrete Machinery Company	61
Concrete Transport Mixer Co.	46
Cook Bros. Equipment Company	18-19
Cook & Ingle Concrete Products	43
Dewey and Almy Chemical Co. Div. of W. R. Grace & Co.	44 & 45
Dunn Manufacturing Co., W. E.	59
Dur-O-Wel Products Company	49
Economy Forms Corporation	41
Edick Laboratories	35
Edmont Manufacturing Co.	59
Elastizell Corp. of America	55
Erickson Power Lift Trucks, Inc.	59
Gocorp	3
Heitzel Steel Form and Iron Co.	32-33
Imperial Construction Equip. Co.	41
Johnson Company, C. S.	52 & 53
Kent Machine Company	54
Lith-I-Bar Company	Inside Front Cover
Lone Star Cement Corp.	4
Manufacturers Equip. Company, The	41
Material Handling, Inc.	47
Modus Masonry Paints	31
Memphis Equipment Company	57
Oswalt Engineering Service Corp.	51
Pick Manufacturing Company	51
Piper and Paine	61
Quinn Wire & Iron Works	57
Smith Corporation, A. O.	11
Solvay Process Division, Allied Chemicals & Dye Corp.	64
Stearns Manufacturing Company	Inside Back Cover
Struthers Wells Corporation	2
Symons Clamp & Mfg. Company	57
Trinity Division, General Portland Cement Company	13
Truck Mixer Manufacturers Bureau	37
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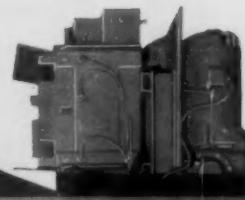
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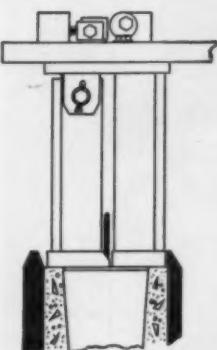
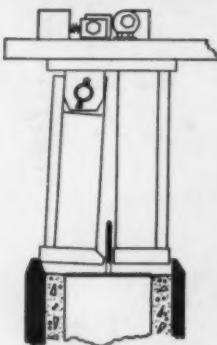
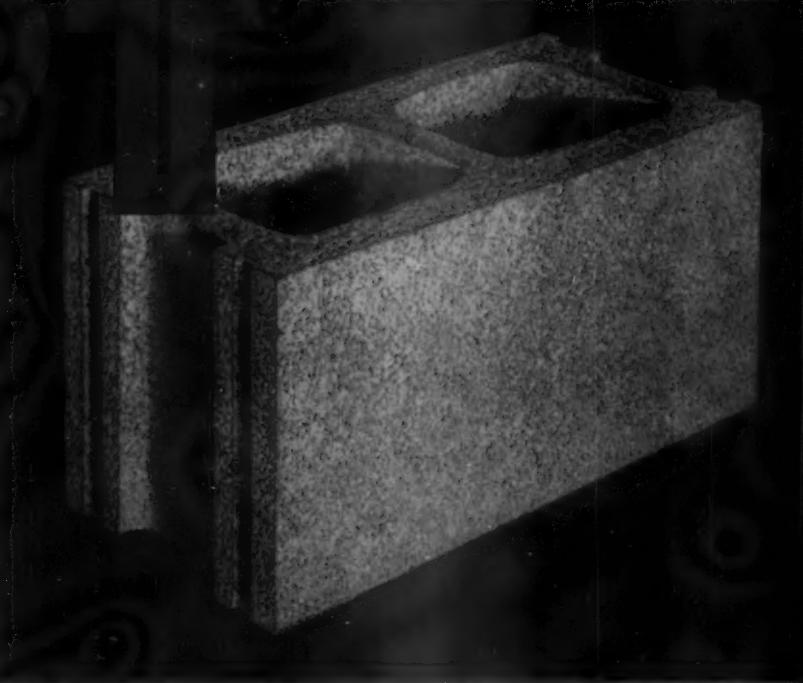
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Upper drawing shows swinging stripper shoe contacting thick beveled division plate, ready to move to right — to contact stationary stripper shoe — to produce a block with U.P.T.

Lower drawing shows swinging stripper shoe — after clearing higher core plate — and contacting stationary shoe — ready to strip U.P.T. block.

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